ENGINEERING NEWS-RECORD

Two-way prestressing breaks a bottleneck p.26

A McGRAW-HILL PUBLICATION

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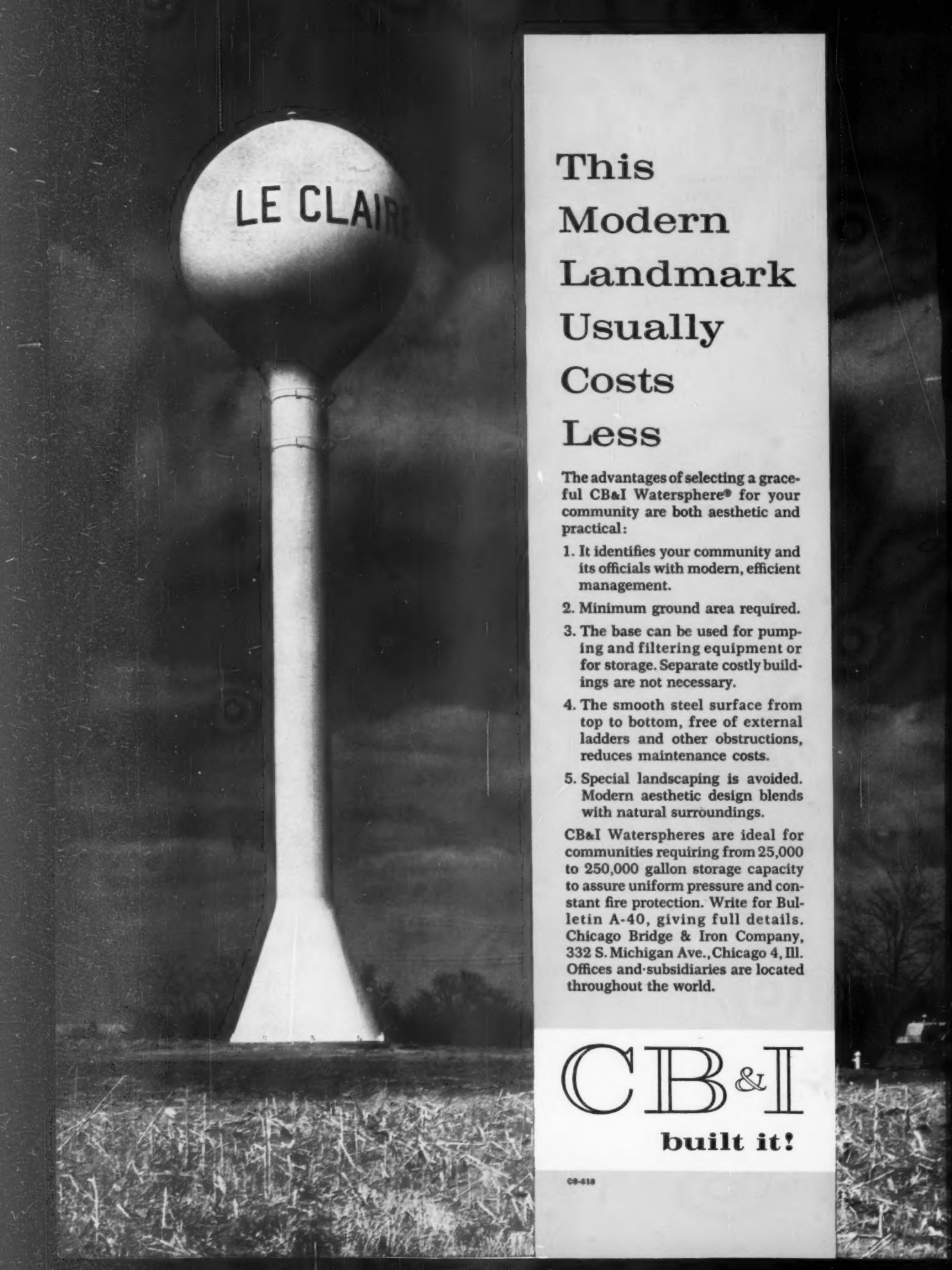

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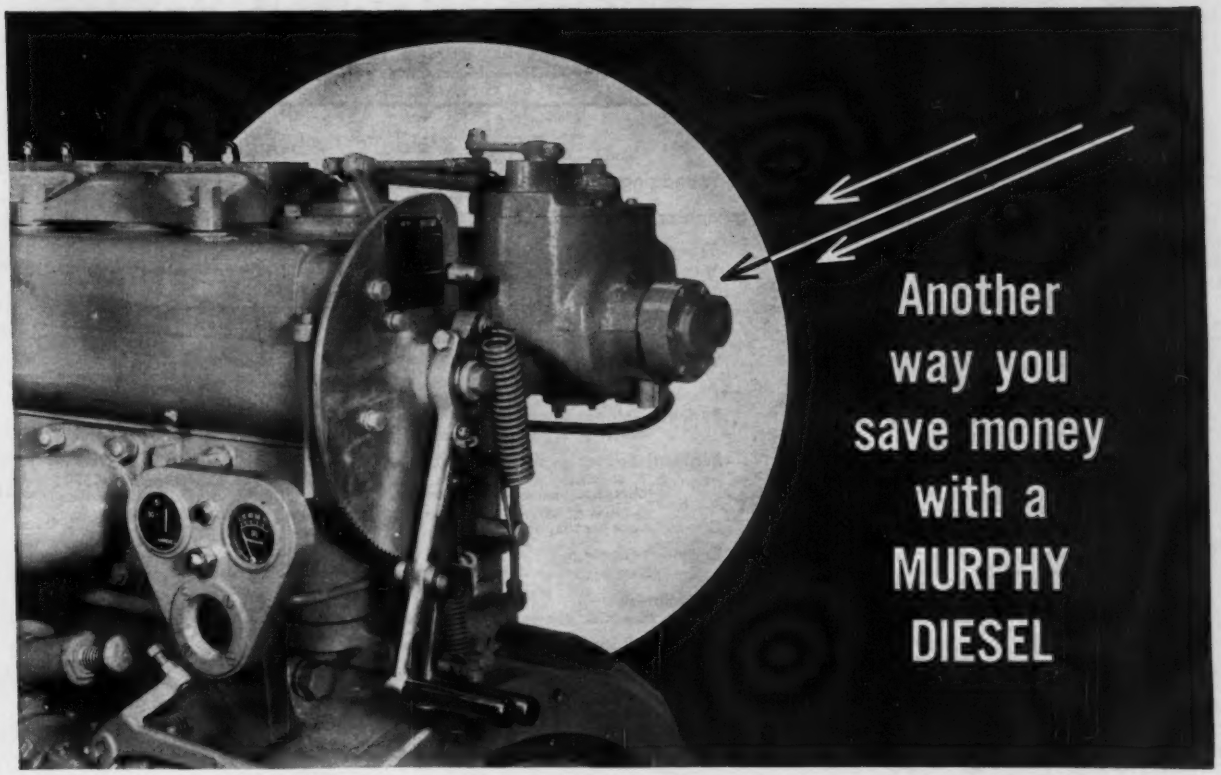

HYDRAULIC SERVO-TYPE GOVERNOR pays off in profit

OTHER MONEY-SAVING MURPHY FEATURES

UNIT FUEL INJECTORS precisely control fuel injection, permitting "true" diesel operation. Starting is easier and operation smoother.

PLAIN, OPEN COMBUSTION CHAMBERS assure *complete* combustion for maximum power from each drop of fuel with less engine wear.

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Murphy Diesel MP Series engines and power units, 105 to 420 HP; generator sets, 70 to 227 KW; dual fuel engines, 147 to 242 HP; marine engines, 105 to 420 HP.

assures instant response to load change protects engine from damage

One diesel engine characteristic of prime importance to your operation is the ability to respond *instantly* to varying loads, as well as assure accurate speed control for steady loads. Murphy's Hydraulic Servo-Type Governor utilizes lube oil pressure to adjust injector controls for precise, immediate response throughout the engine's speed range, from idling to full speed. This type of control assures better combustion at all times to save you fuel dollars. It minimizes abnormal operating conditions that cause excessive wear.

An important safety feature . . . If lube oil pressure drops below a safe level, the governor automatically shuts off the engine, protecting it from possible damage.

The Hydraulic Servo-Type Governor is one of many exclusive Murphy design features. Ask your Murphy Diesel Dealer to explain the combination of features that make Murphys first choice for dependability and economy.

MURPHY DIESEL ENGINE FEATURES MEAN MORE PROFITABLE OPERATION

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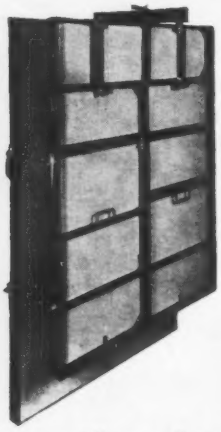
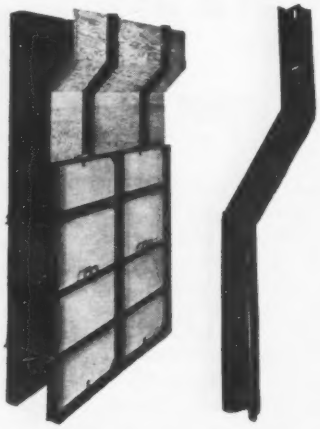


Symons cantilever bracket

Purpose of the cantilever bracket is to support inside form work and thus allow a difference in form heights for a monolithic wall-slab pour. An economical way to pour swimming pools, sewage treatment plants, and any other type work requiring a monolithic wall and base slab pour. Designed particularly for use with Symons Steel-Ply Forms.



Symons haunch bracket

Designed for pouring haunches, corbels or offsets. The brackets are made to order to any size the job requires. Designed for ¾" plywood, the brackets are connected to Symons Steel-Ply Forms with regular form hardware.

For further information on these new products, as well as Symons Steel-Ply Forms, just write:

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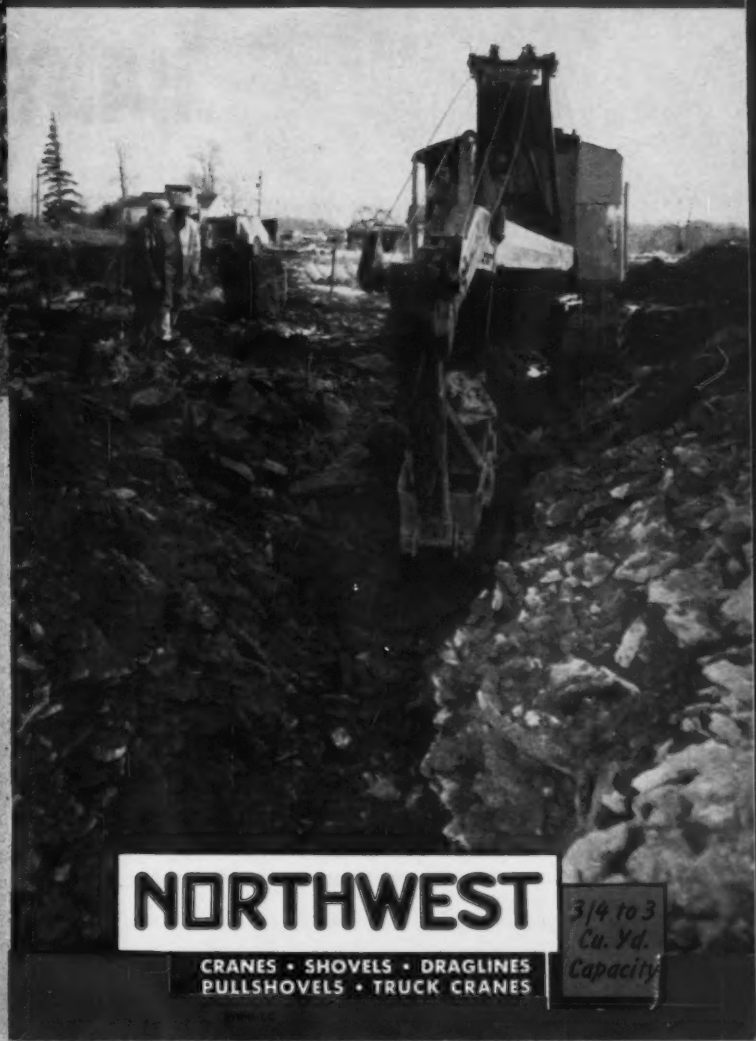
WILL YOUR PULLSHOVEL go through stuff like this and MAKE MONEY?

Cemented conglomerate—digging so tough that teeth fairly melted away—a California job successfully handled!

Blue and white limestone! A Texas job that couldn't stop a Northwest.

Dolomite—75 miles of it. On a sewer job in New York State. The Northwest taught some new es-



Take a look at this digging! These are photographs of successful work, not exaggerated art work. Tough digging doesn't stop a Northwest Pullshovel and you don't need any extra equipment to keep the bucket in the cut.

Note the banks! Big, smooth, easily operated Uniform Pressure Swing Clutches have the power to hold the bucket against a wall or easily and accurately spot the load where your operator wants it. In his hands, through the Feather-Touch Clutch Control, he has the feel of the load to a degree not possible with any air or hydraulic control—a simple mechanical device, free of tubing, pumps, compressors or other delicate mechanisms that can fail and shut you down. Here is digging power, efficiency of operation that means speed and output and the operating advantages that mean profit on a rig that is always ready to go.

There is every advantage you need for your Pullshovel or Crane, Shovel or Dragline job. Get the whole Northwest story before you buy.

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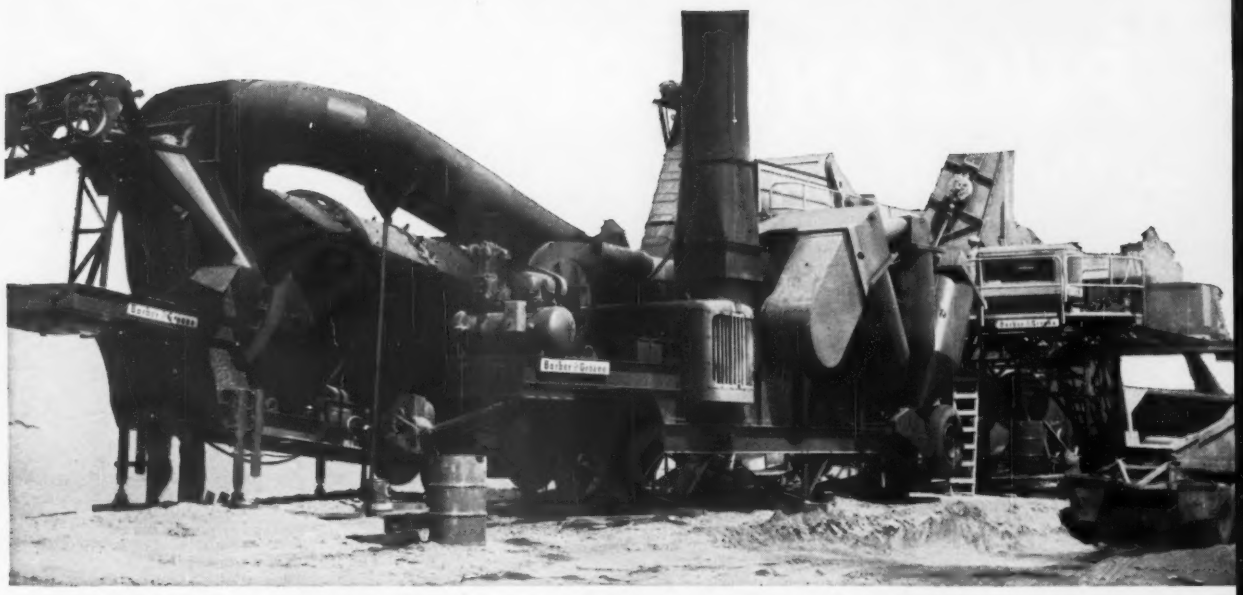


ONE OF 54 NEW DRYERPACS is shown on Barber-Greene Continuous Mix Plant. By offering the industry's broadest choice of dryer-dust collector combinations, only Barber-Greene gives you balanced components custom fitted to your plant capacity and your own operating conditions. Benefits: lower initial and operating costs, longer life, higher resale.

54 NEW BARBER-GREENE ANY PLANT CAPACITY

New line developed after comprehensive two-year tests breaks dryer bottleneck in hot mix production, assures top capacity per dollar of plant investment.

Barber-Greene's 54 new Dryerpacs take the guess and gamble from selecting the correct dryer-dust collector combination needed to produce lowest cost hot mix at any rate from 65 to 350 t.p.h.

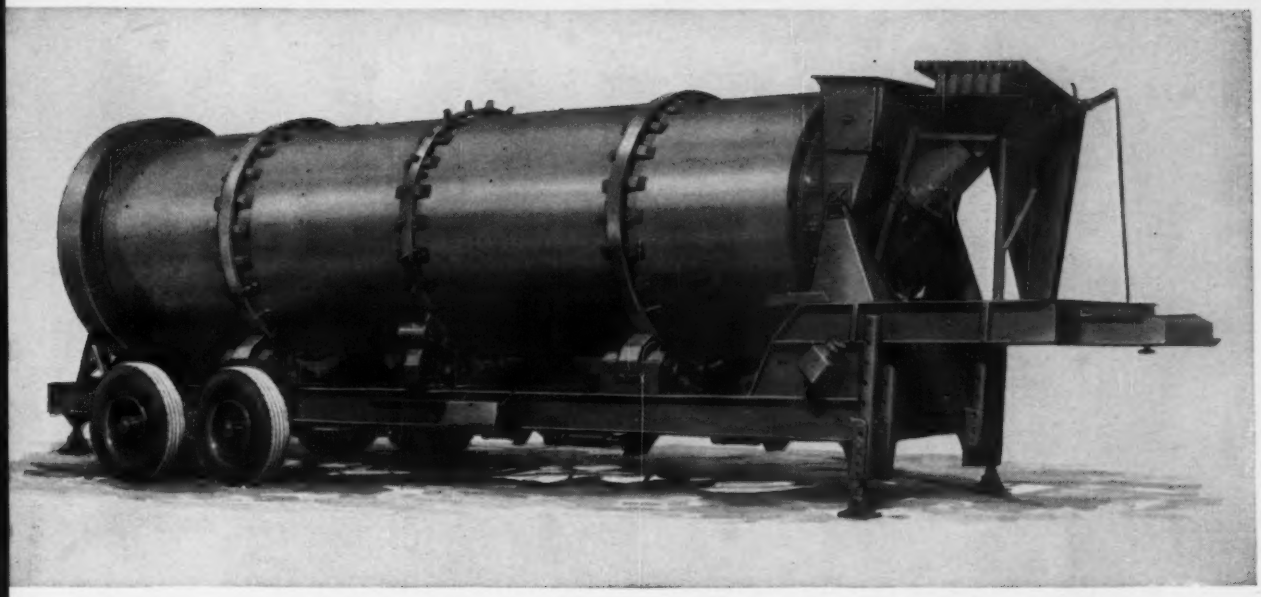
Now you can choose from 27 drying capacity ranges in either stationary or portable models. Drum sizes range from 5′ x 20′ to 9′ x 30′, and air flow capacities of 12,000 to 54,000 c.f.m. For small plants in the 30-65 t.p.h. range, you can select from two single chassis Dryerpacs.

Outgrowth of comprehensive test program

All 54 new dryer models offer optimum performance through scientifically balanced designs. By conducting the industry's most comprehensive dryer testing program, Barber-Greene was able to put the many interrelated factors influencing dryer performance in their proper perspective. And from this two year research program comes equipment that breaks the dryer bottleneck in asphalt plant production for more profitable operation.

Outstanding new dryer features include: exclusive cradle chain drive for up to four times longer chain life; self-adjusting seals that reduce fines loss and improve combustion; exclusive power driven clog-free rotary inlet chute; special Man-Ten steel plate used for drum shell handles heat stresses without warping; roto-elevator discharge eliminates pit, assures positive flow; and a complete selection of burners which can be equipped with automatic controls.

Call your Barber-Greene Distributor for assistance in selecting the Dryerpac custom fitted to your needs. You'll get further proof why the modern Barber-Greene BatchOmatic and Continuous asphalt plant lines lead the industry for lower cost high capacity production, most accurate and automatic operation, lower maintenance, and the ultimate in portability when required.



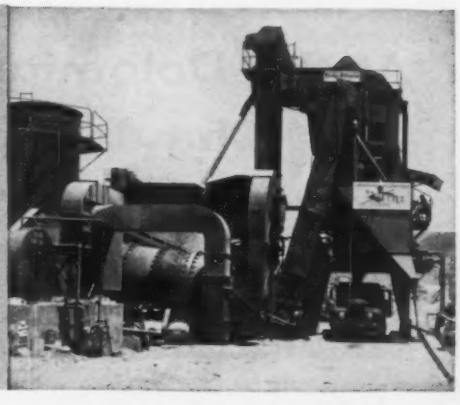
Barber-Greene Dryer Line offers industry's most advanced dryer design. All dryers in the DA series (20' drum) and DC series (30' drum) are offered in a selection of air flow capacities. Each dryer operates with capacity-balanced portable or stationary dust collectors as one system and assures you top plant capacity per dollar of plant investment.

DRYERPACS* CUSTOM FIT FROM 65 TO 350 T.P.H.

**Dryer-Dust Collector Combinations*

SEND FOR NEW BULLETINS. 16-page Dryer Principles describes and gives conclusions drawn from most comprehensive dryer testing program ever conducted. Dryerpac Bulletin shows many outstanding features of this 54-model line and presents for the first time the multitude of related factors required for optimum dryer performance. You'll find both brochures helpful in pointing the way to most profitable plant operation.

New Dryerpac line includes a complete selection of stationary drying equipment for either highway or urban batch plant operation. Matched Stationary Collectors offer flexibility in plant arrangement and disposition of collected fines. Two Wet Collector Series are available in a wide range of efficiencies to meet any air pollution code at the most economical level.



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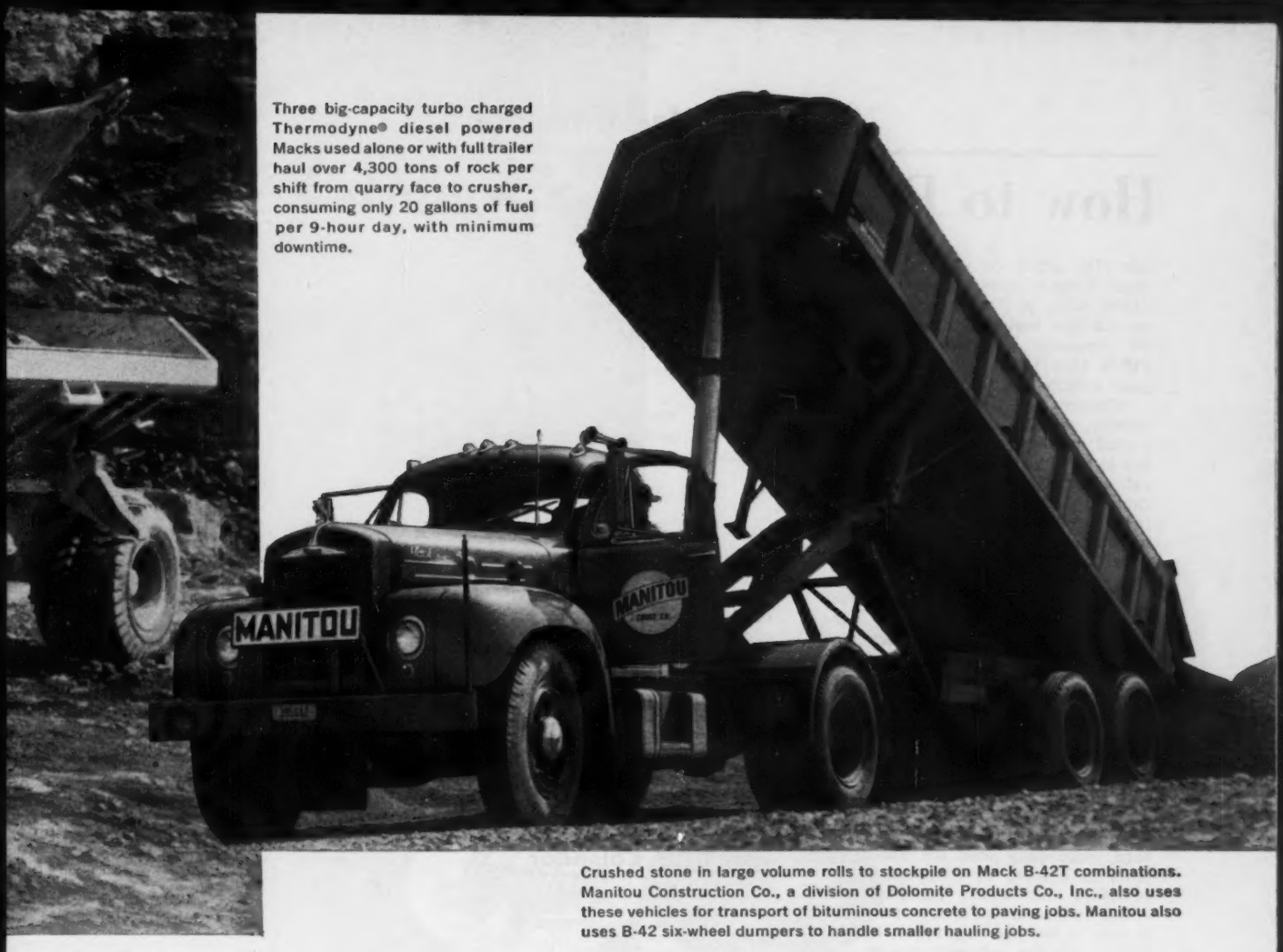
Dolomite Products Co., Inc., Rochester, N. Y., avoids profit-squeezing hauling costs because it has the know-how and experience to analyze its truck needs with an eye to keeping costs under strict control. Loads, terrain, schedules, climate, speeds, etc., all must be carefully weighed in selecting trucks for best all-round performance. For twenty years, Dolomite has been developing the use of Mack trucks in a wide variety of assignments . . . keeping its large and diversified operation rolling smoothly, profitably.

From the big-capacity, double-bottom side-dumpers that handle 130,000 lb. gross in the quarry operations to the fast-stepping mixers and B-30 Models that take care of jobs in the metropolitan area, each Mack in the fleet contributes to the over-all performance of the operation by giving maximum performance on the job it's designed to handle.

Macks deliver most profitable performance on every job because what goes into a Mack is **made by Mack.** Engines, clutches, transmissions, axles, drives and all other major components are **made by Mack** for Mack trucks alone . . . made to the highest standards of the industry to work together for maximum efficiency. This results in Balanced Design—Mack's way of making sure you always get unqualified satisfaction . . . of being sure that every Mack on your job



Three big-capacity turbo charged Thermodyne® diesel powered Macks used alone or with full trailer haul over 4,300 tons of rock per shift from quarry face to crusher, consuming only 20 gallons of fuel per 9-hour day, with minimum downtime.

Crushed stone in large volume rolls to stockpile on Mack B-42T combinations. Manitou Construction Co., a division of Dolomite Products Co., Inc., also uses these vehicles for transport of bituminous concrete to paving jobs. Manitou also uses B-42 six-wheel dumpers to handle smaller hauling jobs.

Ready-mix concrete on its way from one of Dolomite's Rochester plants is handled by B-42 Model Macks. These mixers work in a metropolitan area where heavy traffic and stop-and-go driving can quickly wear down anything but a top-quality truck.

gives the best possible truck performance and maintains the longest prime of life.

Your Mack representative is qualified by knowledge and experience to help you determine the Mack model that will provide the most economical solution to your trucking problem. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

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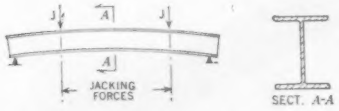
How to Preflex High-Strength Beams

SIR—The article on the United States Steel Corp.'s recent design seminar (ENR May, p. 22) and the editorial on the new horizons being opened to all designers by higher-yield steels (ENR May 11, p. 80) have caused a great anticipation among engineers.

Whatever our immediate field of activity, we all welcome any technological improvement that tends to result in better design and more economical structures. As the editorial wisely cautions, however, the increase in yield in the steel must be accompanied by an improvement of the welding and fatigue characteristics as well as by an increase in the *E* value. The latter requirement is patricularly important to obtain beams with adequate stiffness and in view of the fact that ordinary rolled shapes seldom exhibit the 29,000,000 psi modulus presently in use.

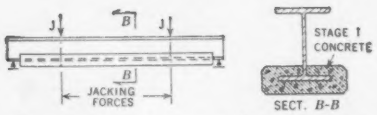
We wish to bring your attention a design and construction method that makes use of the high-strength steels already available and yet overcomes most of the problems inherent in their present properties. The method, known as the Preflexing Technique has been successfully used for about ten years in a score of European, Latin American and African countries. An article on this method appeared in ENR as early as five years ago (ENR June 6, 1957, p. 82), but perhaps its significance escaped most readers at that time.

Basically, the Preflex beam uses the two primary construction materials in the most ideal stress condition: steel in tension, and concrete in compression. Briefly, the manufacturing process of such a beam is as follows:



Jacking forces bend cambered beam.

The high-strength steel beam is "preflexed" (step 1), thereby creating high tensile and compressive stresses in the bottom and top flange, respectively. With the beam thus preflexed, the Stage I concrete is poured around the bottom flange (step 2). When the concrete has reached sufficient strength, the jacks used for the preflexing are released (step 3). The elastic return

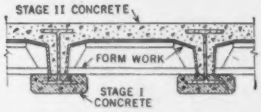


Concrete is cast around bottom flange.

Removal of jacks compresses concrete.

of the steel beam is opposed by the concrete. The latter is thus put under compression, which will be maintained throughout the loading range, represented by the addition of the cast-in-place Stage II concrete (step 4) and the subsequent application of the design load.

The uncracked composite section has a high moment of inertia, which results in very small deflections. The favorable distribution of the stresses permits long spans to be built with very shallow depths (d/L = 1/30 or less). Resistance to fatigue loading is also improved since the stress variations corresponding to the application and removal of the design live load remain at all times within a very narrow range. The beam, totally surrounded by concrete, is protected against corrosion.



Floor slab concrete is cast.

CHARLES C. ZOLLMAN
Partner
Schupack and Zollman
Stamford, Conn.

Editor's Note: A new development is prestressing of beams by adding a cover plate of high-strength steel to the temporarily flexed member during fabrication (ENR May 4, p. 22).

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

For Your Calendar . . .

American Society of Civil Engineers, Hydraulics Division Conference, University of Illinois, Urbana, Ill., Aug. 16-18. Write: James M. Robertson, 125 Talbot Laboratory, University of Illinois, Urbana, Ill.

Society of Automotive Engineers, heavy-duty vehicle meeting and display, Milwaukee Auditorium, Milwaukee, Wis., Sept. 11-14. Write: R. W. Crory, Society of Automotive Engineers, Inc., 485 Lexington Ave., New York 17, N. Y.

Annual Joint Engineering Management Conference, Hotel Roosevelt, New York city, Sept. 14-15. Write: ASME Meetings Department, 29 W. 39th St., New York 18, N. Y.

New England Water Works Association, annual convention, Poland Spring House, Poland Spring, Me., Sept. 17-21. Write: Poland Spring House, Poland Spring, Me.

Standards Engineers Society, annual meeting, Hotel Sherman, Chicago, Sept. 18-20. Write: Standards Engineers Society, 170 Livingston Ave., New Providence, N. J.

Producers' Council, Inc., annual meeting, Pittsburgh Hilton Hotel, Pittsburgh, Pa., Sept. 20-21. Write: Producers' Council, Inc., 2029 K St. NW, Washington, D. C.

Industrial Building Exposition and Congress, New York Coliseum, New York City, Sept. 25-28. Write: Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

American Gas Association, annual convention, Statler Hilton Hotel, Dallas, Tex., Oct. 1-4. Write: J. A. Cushman, American Gas Association, 420 Lexington Ave., New York 17, N. Y.

Engineers' Council for Professional Development, annual meeting, Sheraton Seelbach Hotel, Louisville, Ky., Oct. 2-3. Write: Engineers' Council for Professional Development, 29 W. 39th St., New York 18, N. Y.

Western Building Industries Exposition, Great Western Exhibit Center, Los Angeles, Oct. 7-10. Write: Western Building Industries Exposition, A. Byron Perkins & Associates, 2216 S. Hill St., Los Angeles 7, Calif.

Water Pollution Control Federation, annual meeting, Schroeder Hotel, Milwaukee, Wis., Oct. 8-12. Write: Water Pollution Control Federation, 4435 Wisconsin Ave., Washington 16, D. C.

American Standards Association, national conference, Rice Hotel, Houston, Tex., Oct. 10-12. Write: American Standards Association, 10 E. 40th St., New York 16, N. Y.

American Society of Civil Engineers, annual convention, Statler Hilton Hotel, New York City, Oct. 16-20. Write: Wm. H. Wisely, American Society of Civil Engineers, 33 W. 39th St., New York 18, N. Y.

American Society of Safety Engineers, annual meeting, Conrad Hilton Hotel, Chicago, Oct. 16-20. Write: L. Levine, 5 N. Wabash Ave., Chicago 2, Ill.

National Safety Congress, Chicago, Oct. 16-20. Write: R. L. Forney, National Safety Council, 425 N. Michigan Ave., Chicago, Ill.

National Metal Exhibition and Congress, Convention & Exhibits Building, Detroit, Oct. 23-27. Write: Chester L. Wells, American Society for Metals, 7301 Euclid Ave., Cleveland 3, Ohio.

Consulting Engineers Council, semi-annual meeting, Golden Gate Hotel, Miami Beach, Nov. 1-3. Write: Larry N. Spiller, Consulting Engineers Council, 322 Reisch Building, Springfield, Ill.

Conference on U. S. Government Construction Contracts, Statler Hilton Hotel and Lisner Auditorium, George Washington University, Washington, D. C., Nov. 6-7. Write: Construction Contracts Conference, The National Law Center, George Washington University, Washington 6, D. C.

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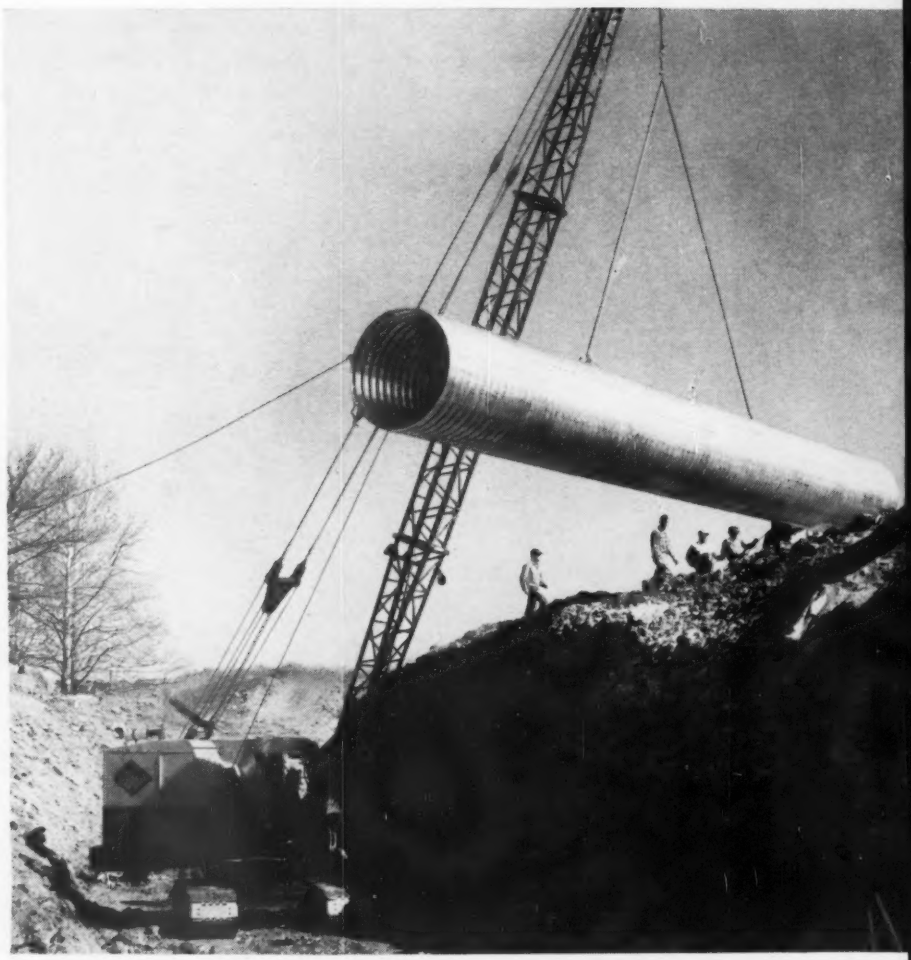

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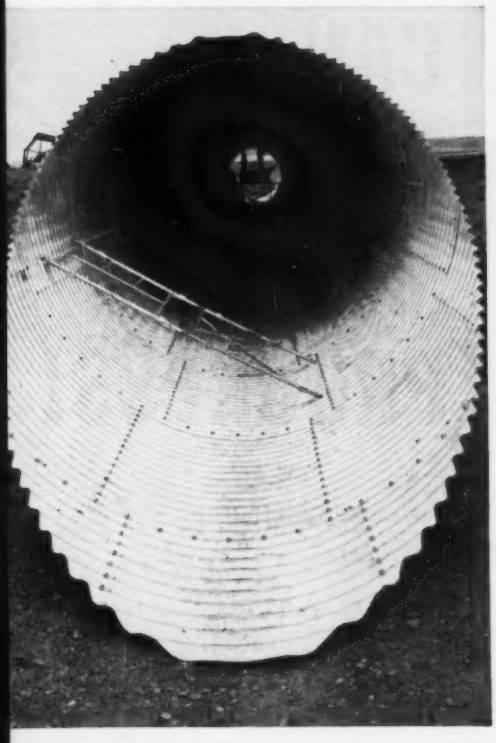

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THE CONSTRUCTION WEEK

END OF THE LINE?—Planners of the San Francisco Bay Area's billion-dollar rapid transit system got a severe setback Monday. Consulting engineer Clifford E. Paine advised directors of the Golden Gate Bridge not to permit rapid transit rails on their bridge. He claims the increased load would cause excessive deflections that would interfere with navigation clearance. His advice conflicts with that of Carl H. Gronquist, of Steinman, Boynton, London and Gronquist, New York, who says the bridge can safely carry trains.

THE BIG SWITCH—Low bid by Peter Kiewit Sons' Co., Omaha, on second Minuteman missile base was 16% below the Corps of Engineer estimate of $66,548,147. Even the highest of three other bids was $3.1 million below the estimate. Last December, a Kiewit-sponsored joint venture bid on the first Minuteman base was 94% above the $50.8-million estimate; the lowest was 50% higher.

POWER PLAY?—William F. Callahan, chairman of the Massachusetts Turnpike Authority still insists on building an extension of the turnpike into Boston. Gov. John A. Volpe still insists on a freeway. Their conflicting opinions followed a 40-minute conference of the two officials last week. Attempts to sell a revenue-bond issue for the turnpike failed twice this year—in April and in June (ENR June 29, p. 49).

BIG TALK ABOUT BIG BRIDGE—Planning for the longest bridge in the world—a 40-mile-long structure across the River Platte between Buenos Aires, Argentina and Colonia, Uruguay—has moved out of the dream stage and into the talking stage. The $45-million bridge, half again as long as Louisiana's Lake Pontchartrain Bridge, will be built of precast, prestressed concrete in 60-ft, 180-ton sections. It will have side sections to provide areas for restaurants, service stations and shops.

SUSPENDED WHEEL—New York City's Deputy Superintendent of Schools in charge of construction and maintenance, Joseph R. Weiss, was suspended from his $26,000-a-year job last week. The suspension followed conflict of interest charges and conflicting testimony at public hearings in New York's school scandal (ENR June 29, p. 17).

ARBA RECOGNIZES CORRUPTION—Consensus at recent meetings of the American Road Builders Association: ARBA can't be a policing organization. It has no code of ethics and thinks it impossible to draw one up to cover its broad range of membership. However, ARBA's convention advisory committee expressed "concern about administrative matters" and urged that its convention next March in San Francisco include discussion of highway scandals.

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▶**Pittsburgh's X-L-O Structural Steel Primer** cuts costs, because it has exceptional "steel surface-wetting" characteristics that minimize the need for expensive cleaning with power tools or blast equipment before shopcoating. Simple hand cleaning is usually adequate, and saves money without sacrificing quality.

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WASHINGTON OBSERVER

- **Tax man smiles on overseas building**
- **Space agency surveys space—on earth**
- **School building defers to ally building**

● **Overseas construction subsidiaries are not included in the Treasury's draft language for proposed taxing of tax havens generally.** The Treasury's specific definitions of tax havens and tax haven transactions were published for next year's study by the House Ways and Means Committee and affected firms. But Treasury officials give separate consideration to the problems of foreign subsidiaries engaged in construction abroad. Presumably, Treasury will recommend different rules for them.

Construction equipment manufacturers are already affected by one tax haven decision. The Export-Import Bank has a new policy against approving loans or loan guarantees to foreign subsidiaries of U.S. firms if the question of tax haven operations is involved. Ex-Im has denied a number of applications, including one from the Venezuelan subsidiary of A. O. Smith, Milwaukee manufacturer.

—

● **A $60-million expansion for the National Aeronautics and Space Administration's task group that handles manned space flight is scheduled for the current fiscal year.** The agency can either expand its present facilities at Langley, Va., or move to a new location. A growing group of engineers and technicians is working on the manned flight program, with the present staff of 800 expected to double by next year.

Speculation is that a new site will be selected, with Houston, Tex., the likely spot. But this will not be final until completion of surveys of other locations in Texas and Florida. NASA will need more and more test facilities in addition to engineering and administrative offices. For one thing, the group plans to build a huge vacuum chamber where space capsules can be subjected to simulated space environments.

—

● **Chances for federal aid for school construction and for building college classrooms are hurt by the Berlin crisis.** Congressmen voting willingly for another $3.5 billion for defense will tend to economize on school aid, which was in trouble anyway. Democratic leaders will let the school aid issue simmer while emotions stirred by religious side issues cool, and while the Administration pushes foreign aid through Congress. If spending must be cut somewhere, President Kennedy would rather sacrifice school aid than foreign aid.

—

● **The outlook for Mr. Kennedy's big foreign aid program is improving.** The program calls roughly for tripling the amount of money available for long-term economic development overseas, which will mean a step-up in construction in many parts of the world.

Key provision is a request for authority to borrow $8.8 billion directly from the Treasury over the next five years to finance projects in underdeveloped countries. Conservatives attack this as "backdoor financing." But the Berlin crisis supplies the pressure the Administration needed. It appears now that Congress will grant borrowing authority for at least three years in exchange for new congressional review powers to guard against waste.

PROTECTION IN DEPTH

How it helps cut compensation costs

Showing proper respect for high pressure hazards

Many of Liberty Mutual's workmen's compensation policyholders manufacture or use containers and vessels which must withstand high pressures. Testing this equipment (sometimes to destruction) can be extremely dangerous. To establish safe procedures for both pneumatic and hydrostatic testing, these policyholders often call upon Liberty for advice. As a service of protection in depth, Liberty loss prevention engineers will examine a policyholder's testing methods, recommend precautions and improvements in the test apparatus and facilities.

Liberty's protection in depth, while reducing hazards, also includes services that lessen the impact of injuries that do occur. Good examples: a medical advisory service, two rehabilitation centers and a field staff of rehabilitation nurses.

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New 'Garden' Joins Arena Parade

The nation-wide drum-beating for massive exposition-sports centers thunders toward a high-priced climax in New York City. A private investment group plans construction of a $75-million sports center on the site of Pennsylvania Station.

This latest proposal strongly supports findings of an ENR survey that multi-purpose exposition structures fit comfortably into much larger building complexes. New York's latest hope for a new Madison Square Garden—planned successor to the present 36-year-old Garden—forms part of a commercial development (see picture).

Other units planned include a three-story perimeter building around the nine-acre tract, 34-story office-garage building, 28-story hotel, and a second smaller arena.

ENR's national check of arena-exposition activity planned and under way points up the business-generating potential of the structures. Commerce and industry flourish on conventions and cities compete frantically for the business.

Conventioneers, however, need rooms, food and entertainment. Cities and private interests cater to those demands, so that many backers plan facilities with all the desired ingredients in one fairly compact area.

But as one large project jells, another large one stands on the brink of destruction; Pennsylvania Station will be razed. A concrete slab—base for the new Garden—will replace the station superstructure, leaving undisturbed the tracks and other railroad facilities located below grade. The existing station superstructure is for the most part merely enclosed air-space.

Plans now call for a demolition-start after the first of next year, according to Irving Mitchell Felt, chairman and president of Graham-Paige Corp. The investment company now owns the present Garden, 16 blocks from the station site. There will be no interruption of train service during demolition or construction.

A new company, Madison Square Garden Center, Inc., will build and operate the project. Graham-Paige and the Pennsylvania Railroad will own it 75% and 25% respectively.

Completion is scheduled for 1964—12 months for engineering, 24 months for construction—according to Charles Luckman of Charles Luckman Associates, New York City architectural firm that designed the complex.

The main sports arena will consist of radial concrete cantilever ribs rising upward and outward to support seating. The ribs will terminate in an elliptical concrete compression ring topped by a cable-suspended roof hung from the ring girder. The roof area will be approximately four acres.

This main unit will seat 25,000 persons. The smaller supplementary arena will house 4,000 seats and be convertible for use as a convention hall.

The first 12 floors of the 34-story commercial building will contain parking space for a total of 3,000 automobiles.

If all goes according to plan, the remaining 22 floors will be leased by one internationally known company, Mr. Felt says. Two companies reportedly seek the space.

Negotiations with potential hotel operators will start shortly, although commitments appear to be some time away. One contender could be Hotel Corporation of America, a company in which Graham-Paige is a major stockholder.

The plan for the new Madison Square Garden brings to 73 the number of such projects proposed, under way or completed, according to ENR's survey. In 1959 only 46 structures fell into these categories.

The survey showed that descriptions of multi-purpose buildings vary greatly. Auditorium, arena, convention hall, coliseum show up as interchangeable terms. Every locality picks its own name. The International Association of Auditorium Managers, however, reports general agreement on one point: To qualify as an auditorium, arena, convention hall or coliseum, a variety of activities must be provided under one roof.

Whatever the term, the new buildings just completed or those proposed contain a lot of space. The new ones average 200,000 sq ft. each, compared with 70,000 sq ft in structures of earlier years. More space means larger exhibits, larger crowds and larger revenues.

Most of the new structures seat about 11,000 persons; the older ones seat 8,000 to 9,000. This meets the greater

. . . Exposition halls loom as bigger markets

demand for great open areas for use as display halls for conventions and expositions.

But if seating capacities remained relatively stable, construction costs did not.

The ENR survey shows construction costs soared from an average of $3.8 million for the old buildings to $7.2 million for the new ones.

But high costs fail to halt construction or planning. Cities of all sizes in all sections of the country jump on the auditorium-arena bandwagon. All sections of the nation get excited—for or against—when an exhibit hall looms on the horizon. The biggest concentration of activity however, appears west of the Mississippi. Plans and construction in that wide area represent 33% of the total checked by ENR. The South follows with 30% and the northeastern seaboard is a weak 12%. The balance of activity is scattered in the remaining regions.

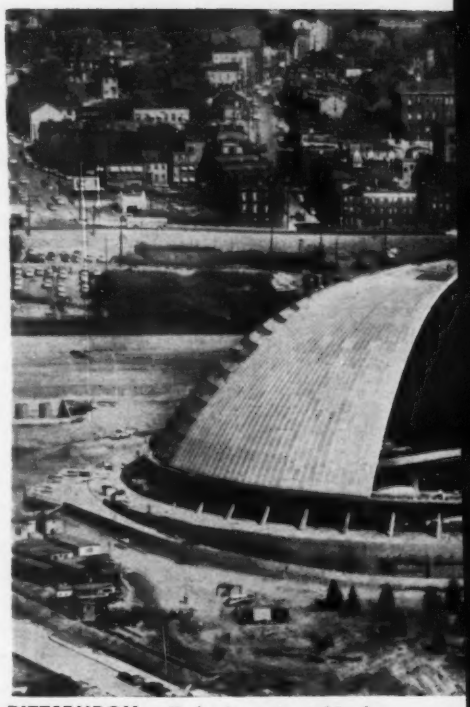
When it comes to construction, however, the showing is weak. Of the 73 projects spotted in the ENR check, 56 fall in the "proposal" category—referendum required, final action by a local government body needed, or still awaiting just a first nod from any government official.

Some will probably die on the architect's drawing board. Others may get as far as a referendum, only to meet defeat, as in Tacoma, Wash. and Hartford, Conn.

Financing is a stumbling block in most cases. Voters reject the idea of additional debt, which must be paid out of tax revenues. Since most of multipurpose exhibition-sports structures are proposed as publicly owned, the short-run mortality rate may prove high.

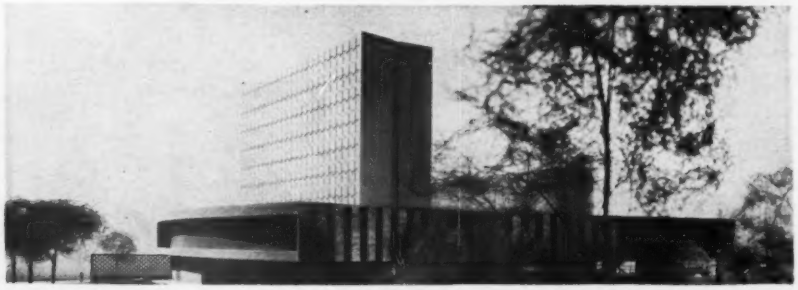
Sometimes the proposed buildings turn up as part of an urban redevelopment project. Continuation of this trend could make it easier to move proposals from the drafting rooms to the construction site.

Wrapped up as part of a much larger renewal package, the exhibit hall becomes a smaller target for opponents to shoot at.



PITTSBURGH rolls back a retractable dome atop

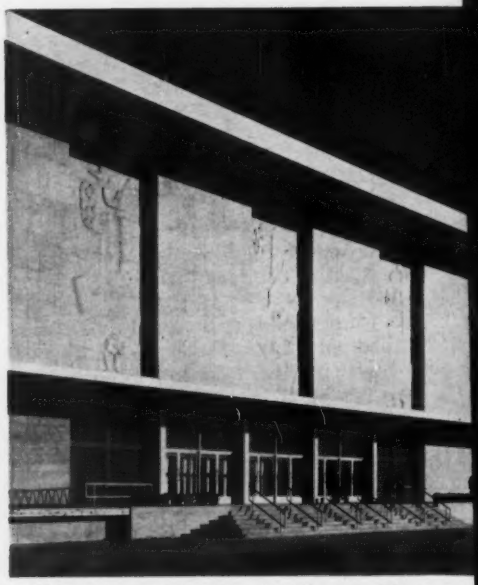
LOS ANGELES has new Sports Arena.



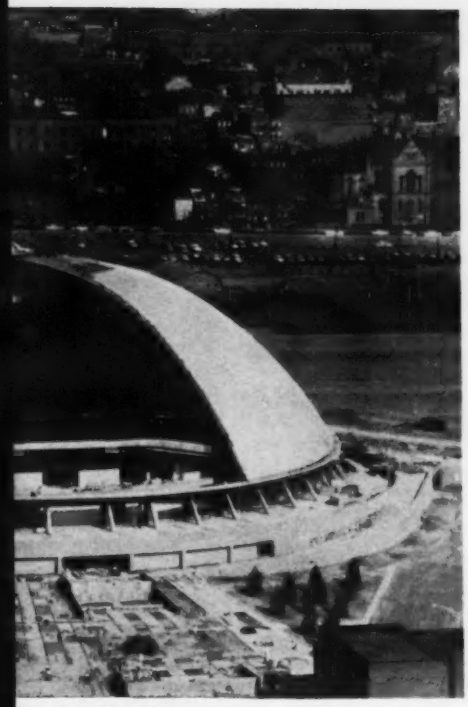
FLINT Mich., will have a $3.5-million auditorium financed by private funds.

LAS VEGAS features a $5-million convention center to seat 8,000 persons.

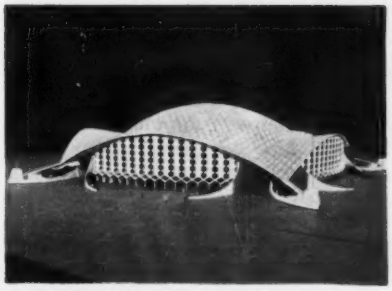
DETROIT combines a recently completed Cobo Hall and a Convention Arena.



CHICAGO sports McCormick Place on 10 acres



the Public Auditorium.



OKLAHOMA CITY plans geodesics.

of a 30.5-acre lakefront site.

BuDocks, GSA Join in CD Survey

The Kennedy Administration continued last week to lay the groundwork for an accelerated federal civil defense program:

- The 18 regional offices of the Navy Bureau of Yards and Docks and the General Services Administration were directed to join with the Army Corps of Engineers in a nationwide survey to identify and mark available nuclear fallout shelter space in existing public and private structures (ENR July 27, p. 19). Survey will be conducted by private architectural and engineering firms under contract to one of these federal agencies.
- President Kennedy announced that all new federal buildings will include space suitable for fallout shelter use.
- An additional appropriation request for $207.6 million was sent to Congress that will triple this year's proposed civil defense program. The extra funds will be part of the Defense Department's budget.

But so far, there's still no sign that Washington is ready to launch a program for construction of new shelters, along the multibillion-dollar lines proposed by the Rockefeller and Gaither reports. The outlook is for what Defense Secretary McNamara calls a "comparatively modest civil defense program."

Secretary McNamara said the new plans are intended "to take advantage of available shelter, and in so doing, provide a large number of shelter spaces at the least cost per shelter space in the near future." He said this "should be sufficient to provide reasonably adequate protection for about one-quarter of the population."

He wants to study what he calls "the most economical ways of further increasing the number of shelter spaces by modifying the shelters now available, principally by installing forced draft ventilation operation from standby power sources, and by planning for new space in new construction adaptable to shelter use."

The Administration continues to stress that the federal civil defense program will remain under civilian control despite the shift of major operating responsibilities from the office of Civil and Defense Mobilization to the Defense Department. A separate unit to run the program will be set up in the office of the Secretary of Defense. A new position of Assistant Secretary of Defense for Civil Defense may be established.

The Administration's new civil defense plans immediately became the subject of a congressional inquiry. This week, the House Government Operations Subcommittee opened hearings to study why the emphasis is placed on finding shelter space in available facilities rather than on building new shelters.

Military Funds Favor Missiles

The fiscal 1962 appropriations bill for military construction, now under consideration by the Senate Appropriations Committee, will provide $1,412,602,000 for obligation by the military services, with more than one-third earmarked for missile facilities.

The House last week voted the bill, providing $811 million in new money, and permitting carryover of unobligated funds from prior years to boost the total to $1.4 billion. An additional $67 million will go for Reserve components of the three services.

The legislation provides some $323 million for facilities in support of the Minuteman missile, for additional training and support facilities for the Polaris, and system improvement for the Nike-Hercules and Hawk systems.

The legislation brought to a head the issue of construction of the Navy's radio telescope at Sugar Grove, W. Va.

An official decision has been made to proceed with construction of the Navy's 600-ft-dia radio telescope at Sugar Grove. But, the House slapped a $135-million ceiling on the final cost of the facility. And, both Congress and the Pentagon plan to watch the project to insure that it keeps within this spending level (ENR July 6, p. 21).

In spite of strong denials by the Navy that it was faced with a major decision over whether to procede with or junk the project, some behind the scenes maneuverings are coming to light. Navy's foot dragging over its decision, caused Congress hardly 10 days ago to tell Secretary of Defense McNamara bluntly that it wanted a Pentagon decision on the matter or money for the program would be withheld from this year's appropriations. The decision to continue followed and there is a $35-million appropriation for fiscal 1962.

The Army total is $242.7 million; the Navy, $252.4 million, and the Air Force, $916.5 million. Army Reserves get $35.3 million; Navy Reserves, $10.5 million, and Air Force, $243,000.

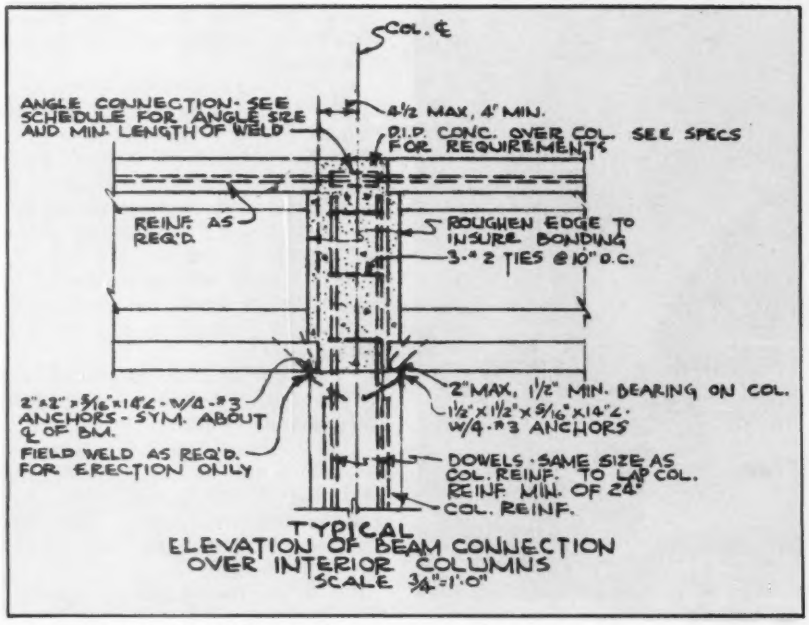
The Kennedy Administration asked for $148.8 million more than the House Committee and the entire House voted. The biggest cuts came in rejections for programs the Committee said are "not clearly essential to the military posture of this country."

Erection Methods Blamed for Collapse

A new report on the prestressed concrete building collapse near Harrisonburg, Va., that killed five workmen last November (ENR Dec. 1, 1960, p. 30) blames faulty erection procedures for the accident.

A two-man investigating team retained by the architect, J. Robert Carlton & Associates of Richmond, Va., contradicts the conclusion of investigators retained by Concrete Structures, Inc., the fabricator-erector. In a report issued last December, the Concrete Structures team blamed the collapse on bearing failures in the beam column connections (ENR Dec. 15, 1960, p. 28).

The contradictory conclusions of the two investigating teams raise questions involving design of precast-concrete column bearing seats, responsibility of engineers in specifying and inspecting fabrication and erection procedures, and the responsibility of the contractor for safety of a precast concrete structure during erection.


COL. ℄
ANGLE CONNECTION - SEE SCHEDULE FOR ANGLE SIZE AND MIN. LENGTH OF WELD
4½ MAX, 4" MIN.
D.I.P. CONC. OVER COL. SEE SPECS FOR REQUIREMENTS
REINF. AS REQ'D
ROUGHEN EDGE TO INSURE BONDING
3-#2 TIES @ 10" O.C.
2"MAX, 1½" MIN. BEARING ON COL.
2"x2"x5/16"x14"℄ - W/4-#3 ANCHORS - SYM. ABOUT ℄ OF BM.
1½"x1½"x5/16"x14"℄ W/4-#3 ANCHORS
FIELD WELD AS REQ'D. FOR ERECTION ONLY
DOWELS - SAME SIZE AS COL. REINF. TO LAP COL. REINF. MIN. OF 24"
COL. REINF.
TYPICAL ELEVATION OF BEAM CONNECTION OVER INTERIOR COLUMNS
SCALE ¾"=1'-0"

BEAM-COLUMN CONNECTION specified 1½-in. minimum bearing.

• **Background**—The collapse occurred as field crews started erecting a new bay on the one-story building. Framing for an adjacent 24,000-sq-ft area had been erected. The building, now completely framed, encloses nearly five acres of factory space for the Walker Manufacturing Co. of Racine, Wis.

The framing consists of prestressed double tees spanning the long dimension of 40x50-ft bays and bearing on the top flanges of prestressed I-beams. The interior beam-column connection specifies a 1½-in. minimum bearing on the 12x12-in. columns (see detail above).

The design detail calls for welding angles to top bars projecting from the beams and then concreting the open joint for composite action.

At the time of the collapse the erector's welders were making connections between the projecting beam bars. Most columns had one splice completed. No beam-column joints had been concreted.

Since the collapse, Concrete Structures has completed erecting the building with 14x14-in. interior columns substituted for the original 12x12-in. columns and with the bearing seats redetailed. The architect approved the change, although Arthur R. Anderson, consulting engineer of Tacoma, Wash., had reviewed and approved the original design. Mr. Anderson is a member of the architect's investigating team.

• **Investigators' conclusions**—Attributing the collapse to "deficient lateral stability of the structure," investigator Anderson names five contributing factors as follows:

• No temporary lateral bracing.

• Improper seating of columns on the footings.

• Inadequate welding at beam-column connections.

• Forcing column and beams laterally after erection against unbraced structure.

• Poor accessibility for field welding of beam-column connections.

According to the report, two columns in the bay under construction when the framing collapsed were apparently 1½ to 2 in. out of plumb. A "come along" anchored to the column base in an adjacent erected bay, pulled these columns toward the erected bay.

Among other alleged faulty field practices attributed to the erector are:

• Poor welding connecting beams to columns, double tees to beams, and column dowels to base plates.

• Overloading the erected structure by stacking double tees up to five high.

• Use of plate shims instead of grout to support column base plates.

Despite their admission that the specifications lacked specific instructions, the investigators maintain that the erector should have followed American Welding Society requirements.

• **Design dispute**—In a separate comment incorporated into the report, W. J. Blanton (a partner in Blanton & Levy, structural engineers on the project) challenged the design calculations of the Concrete Structures' investigators. These investigators computed a bearing stress of 3,460 psi at the beam-column seat under dead load of the beam and its double-tee slabs. They cited the allowable bearing stress of 1,250 psi permitted by the American Concrete Institute Building Code (ACI318-56) for edge loads on 5,000-psi concrete.

Mr. Blanton computed a bearing stress of 2,780 psi using a 1½ x 12-in. bearing area plus a transformed area of 1.56 sq. in. provided by the four No. 3 bar anchors at the column seat angle.

Denying that the ACI318-56 limit of $0.25f_c'$ (allowable bearing stress) governs bearing plates on reinforced concrete, Mr. Blanton wrote:

"There is no bearing detail to be considered in this case but a beam-to-column composite connection which is constructed to form a homogeneous rigid frame. The only bearing employed is temporary and that of steel on steel."

Mr. Blanton maintains that the formula for computing allowable anchorage bearing stress, Section 207.3.4 of the Tentative Recommendations for Prestressed Concrete, ASCE-ACI Joint Committee Report 323, properly governs design of the beam-column bearing seats. This formula reads:

$$f_{cp} = 0.6 f'_{ci} \sqrt[3]{A_c/A_b}$$

Where:

f_{cp} = allowable compressive stress.

f'_{ci} = concrete strength at time of initial prestress.

A_b = bearing area of the anchor plate.

A_c = maximum area of portion of the member that is geometrically similar and concentric with the area of bearing plate.

Using f'_{ci} = 5,000 psi and ratio A_e/A_b = 1, Mr. Blanton computed an allowable bearing stress of 3,000 psi.

Mr. Blanton says the combination of seat angles and anchors, vertical column steel and top column tie (2 in. from the top of column) satisfies the reinforcing requirement of Section 214.4 of the tentative recommendations. Section 214.4 specifies a reinforcing grid with vertical and horizontal steel in the anchorage cross section to resist tensile bursting and spalling forces.

• **Laboratory load tests**—Investigator Anderson, in separate comments, claimed that the laboratory load tests conducted by the Concrete Structures' investigators "did not simulate the structure as erected." Alleged variations comprised:

• Applications of test load through welded bars instead of beams.

• Elimination of welded bar connection at beam tops, thus eliminating "clamping" action over the column.

The laboratory tests conducted by the architect's investigators comprised two phases: with one top bar welded and with connection completely welded and concreted (see detail).

Test on various specimens designed to simulate the temporary erection loading condition (one top bar welded, 109,000 lb on each column, 54,500 lb at each bearing) resulted in safety factors ranging from 1.58 to 3.15.

A test on the composite section stopped at the test load limit of 400,000 lb on the column with "no discernible distress" in the beam-column connection. Mr. Anderson designed this test to simulate the column at total load (179,000 lb on each column).

Four laboratory load tests designed by Concrete Structures' investigators yielded safety factors ranging from 0.83 (i.e., failure before erection load was reached) to 1.47.

Froehling and Robertson, Inc., of Richmond performed load tests for both investigating teams.

J. W. Lacy of Concrete Structures denied many of the allegations in the new report. He stuck by his investigators' report. Their conclusions in brief:

• "A bearing failure could have occurred at any beam-to-column connection . . . at any time after the column had received full erection load."

• "The manner in which the failure was triggered is believed to be immaterial."

Concrete Structures' investigating team comprised three consulting structural engineers: Thomas A. Hanson of Richmond, Jack R. Janney of Chicago, and Ross H. Bryan of Nashville.

The architect's investigators were R. H. Wattinger, president of Southern Engineering & Construction Corp., Richmond, and Mr. Anderson.

What JFK's Desalting Push Means

The Kennedy Administration is plumping for a beefed-up saline water conversion program involving more than $100 million in construction over the next four years.

This construction would stem from grants and loans to communities and expansion of the Office of Saline Water's demonstration plant program.

In Mr. Kennedy's Inaugural Address he encouraged the Interior Department's Office of Saline Water to "think big." OSW took the advice to heart. The program now before the House Interior Committee includes:

• An $82.6-million demonstration plant program.

• A $33.3-million system of grants to municipalities for construction of conversion plants.

• A $25-million program of loans for construction of plants.

The expanded demonstration program outlines firm plans to build 13 more plants, ranging in capacity from 250,000 gallons per day to 25 mgd and using 10 different conversion processes. Of the $82.6 million set for the federal plants, $52.9 million is for construction, spread over four years.

OSW's tentative schedule calls for $10.9 million for construction of three plants in fiscal 1963; $13.5 million for four plants in 1964; $10.8 million for three plants in 1965; and $17.7 million for three plants in 1966.

The OSW grant program would start off with $4 million for five plants in 1963; $8.2 million for five plants in 1964; $11.3 million for nine plants in 1965; and $9.7 million for six more in 1966. Grants would go to communities in depressed areas on the grounds that the water supply might attract industry.

The loan program would make $5 million available for loans annually from 1963 through 1965. During 1966, the final $10 million would be allocated.

The House Interior Committee headed by Rep. Wayne N. Aspinall (D., Colo.), is expected to reach some decision on the White House program shortly. In the past, the Committee has been more interested in research and development than in plant construction.

In contrast, the Senate Interior Committee, under Sen. Clinton P. Anderson (D., N. M.), traditionally is more interested in going ahead with building.

President Kennedy requested unlimited budgets for all parts of his saline water program, but the House Committee has already talked him out of that. It has also shown a strong distaste for grants.

The House group is certain to water down the President's plans, particularly his construction plans. The Senate Committee is equally certain to restore some of what the House cuts out.

Construction dollars would be spread around the country in much the same way the existing demonstration plant program is set up. More than 200 cities already have expressed interest in conversion plants and 91 seriously seek plants.

Ten solid prospects for a plant under one of the plans are:

	Capacity (mgd)
Brownsville-Port Isabel, Tex.	1.6
Bradenton, Fla.	0.6
Key West, Fla.	1.6
Elizabeth City, N. C.	0.6
Virginia Beach, Va.	0.3
Atlantic City, N. J.	3.5
Suffolk County, N. Y.	14.0
Wichita Falls, Tex.	3.5
Alamogordo, N. M.	0.3
Oklahoma City, Okla.	14.0

Governor Acts to Prevent Road Scandal Recurrence

The State of Florida has moved to prevent recurrences of scandals of the type that Blatnik committee revealed in its investigations there (ENR Dec. 1, 1960, p. 38).

To tighten up on its federal-aid highway program, the new administration of Gov. Farris Bryant has:

• Filled the state post of Interstate Highway Administrator, which had been vacant for 18 months.

• Established a project control center using data processing equipment for a constant check on job performance.

• Requested a comprehensive review of the right-of-way program by the Bureau of Public Roads. A separate right-of-way division has been set up in the State Road Administration.

• Changed State Road Board regulations to forbid starting any project until all right-of-way has been acquired. All sales of such property must be by competitive bidding or public auction.

• Tightened and strengthened specifications for all jobs, with a new emphasis on control of procedures and methods.

• Standardized procedures for work on design, drainage and maintenance.

• Introduced a rigid policy regarding acceptance of pay or gifts from contractors, suppliers or consultants.

• Altered change-order procedures so that no contract changes may be made anywhere unless approved by the full Board and made part of its minutes.

• Ordered continued spot checks on all aspects of the road program by a roving investigative division of the governor's office.

House Questions Road to No Place

A road in Peru that goes nowhere, an overpriced Cadillac, and an alleged attempt to make a scapegoat of a Pennsylvania consulting engineer figure in a new round of congressional attacks on the International Cooperation Administration for mismanagement of foreign aid highway projects overseas.

The House Government Operations Committee accused the agency this week of poor planning and excessive haste in the granting a $2-million loan to Peru for construction of a road intended to open up isolated farm areas. The road, which was never finished, ends "on the side of a mountain," the Committee said.

It also lamented the spending of $125,000 on a foreign aid irrigation project in Peru that "does not irrigate."

The House investigators put the blame for these projects on John R. Neale, former chief of the U. S. foreign aid mission who resigned from ICA in 1958 after being accused of a conflict of interest. He lives now in retirement on a cattle ranch in Peru. Mr. Neale was accused of having a financial interest in a Peruvian cattle business that got U. S. benefits under foreign aid agricultural programs he headed.

"Roads that lead nowhere and irrigation projects that do not irrigate have a reverse impact on U. S. (foreign) policy objectives," the Committee's report commented acidly.

Also this week, ICA disclosed that N. Carter de Paul, Jr., chief of its Investment Development Division and former head of the U. S. aid mission in Laos, has resigned, effective in October.

The government operations subcommittee that looked into the Peru situation also had investigated Mr. de Paul's activities in Laos. It accused him of selling an old Cadillac at a highly inflated price to a U. S. contractor, Universal Construction Co., an American company incorporated in Liechtenstein and operating in Laos and Thailand. The contractor worked for the aid mission Mr. de Paul then headed.

He was later promoted and moved to ICA's Washington headquarters.

In another development, Rep. Frank M. Clark (D-Pa.), a member of the House Public Works Committee, traveled to Cambodia to inspect personally a foreign aid highway there that is reported to be disintegrating (ENR June 29, p. 20). Representative Clark accused ICA of trying to shift the blame for the defects in the road and delays in its construction to Michael Baker, Jr., Inc., of Rochester, Pa., the consulting engineer on the project.

Mr. Baker, a constituent of Mr. Clark's, has insisted that he fully discharged his obligations under the terms of his contract. Mr. Baker was often at odds with the contractor in over-all charge of the project, A. L. Dougherty of Hammond, Ind.

Before leaving for Cambodia, Representative Clark wrote the ICA accusing it of making "careless and irresponsible statements" about the Baker company. He said Baker was being "improperly and unfairly treated" and demanded that ICA furnish copies of documentation, legal opinions and other reports gathered in an effort to pinpoint responsibility for the road's failure.

Around the World . . .

• **Frustrated fish**—A superior court refused to issue an injunction to halt construction of Mayfield Dam on Washington State's Cowlitz River. The dam, about 75% complete, threatens fish-runs up the river, according to sportsmen. Mayfield's design includes elaborate fish passing facilities (ENR Mar. 17, 1960, p. 25).

• **Call for computer abstracts**—The International Federation of Information Processing Societies announces its second world conference will be held in Munich, Aug. 27 to Sept. 1, 1962. IFIPS calls for papers on scientific information processing in numerical analysis, statistics, engineering, data reduction and operations research. Send queries or abstracts to: E. L. Harder, Westinghouse Electric Corp., East Pittsburgh, Pa.

• **Save it for fun**—is the plea of the New York Chapter of the American Institute of Architects in urging rejection of residential project proposed for New York City's Welfare Island (ENR May 25, p. 22). The architects claim that Manhattan has inadequate recreation space (1.5 acres per 1,000 people) and that 20,000 families on the small East River island would aggravate rush-hour traffic on transit lines serving it.

• **Tough test for planners**—An $800,000 grant from the Ford Foundation will help finance a master plan for Calcutta, the world's most rapidly exploding metropolis. The city has grown from 3.5 million in 1948 to 6 million in 1960. More than 600,000 sleep in the streets.

• **Arabian heights**—Soviet engineers have completed plans for Baghdad's new TV transmitter tower, a 1,080-ft steel tower that will set a height record for the Middle East. It will have several restaurant platforms and an observation platform 800 ft above grade. The frame will contain 2,400 tons of structural steel.

• **International cooperation**—Japanese, Russian, German and American construction equipment is building a 14-story hotel, a cloverleaf bridge and a stadium in Djakarta for the Indonesian government. Completion for all structures is scheduled to precede opening of the Asian Games in mid-1962.

• **Trans-Argentine road**—An Italian joint venture has been awarded a $3.6-million contract to build a 211-mile road in Argentina to join the Rio Negro Valley with the Atlantic Coast.

PHS Revises 15-Year-Old Drinking Water Standard

The U. S. Public Health Service has announced the first major revision since 1946 of the Drinking Water Standard of the United States.

Although only interstate carriers—trains, planes and buses—are legally bound by the standard, it serves widely as a guide for control of water quality throughout the country.

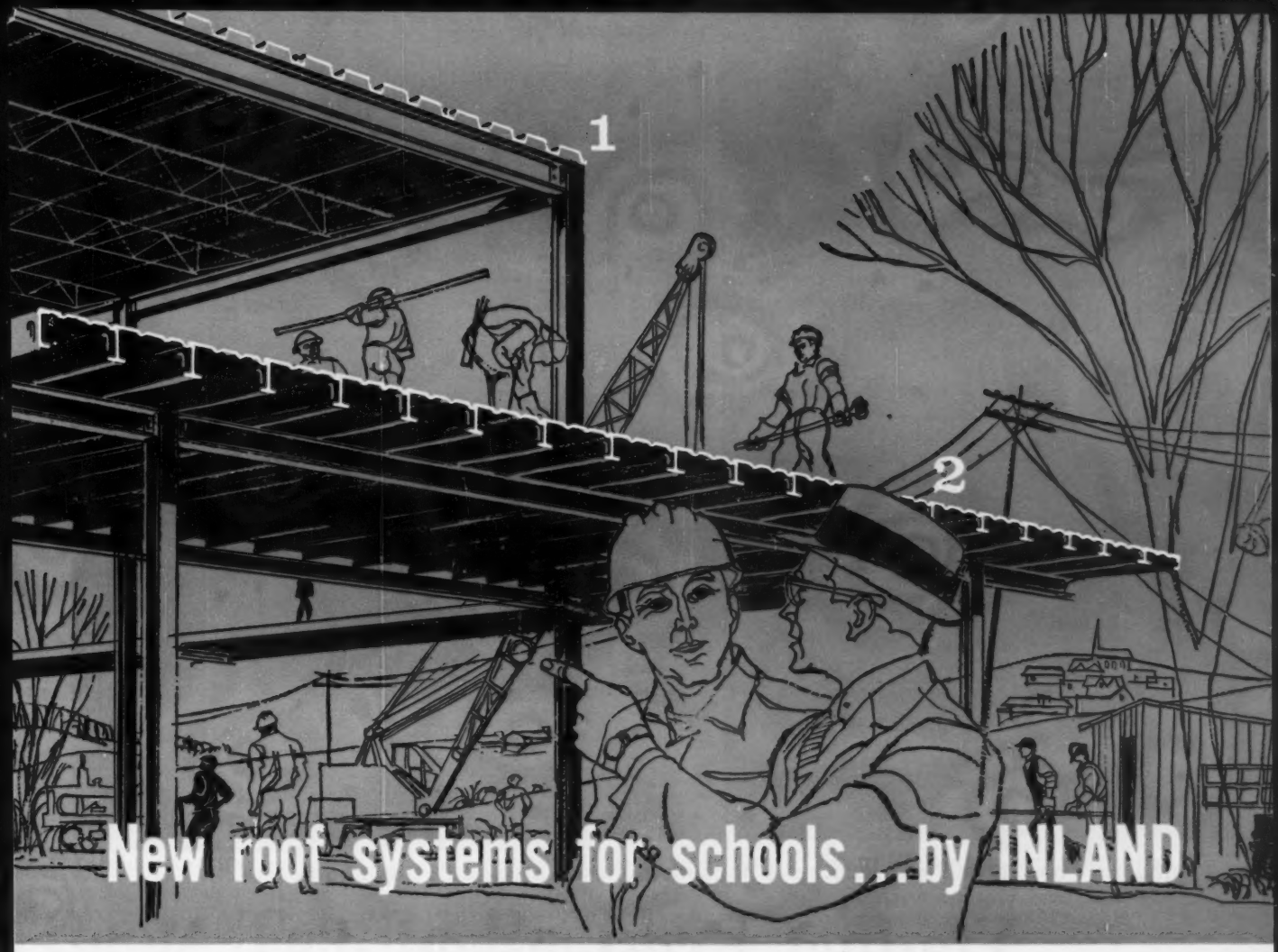
For the first time the standard includes limits for certain chemical pollutants—alkyl benzene sulfonate (detergents), barium, cadmium, carbon chloroform extractables, cyanide, nitrate and silver. Limits an radioactivity were set.

Land Developers Limited To Prize-Winning Designs

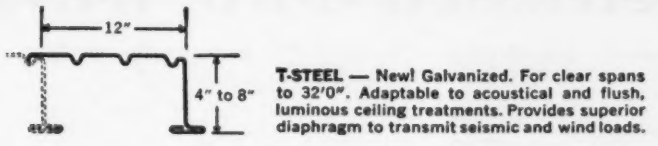
Developers of San Francisco's Red Rock Hill won't be able to buy property in the area unless they agree to use one of four award-winning apartment building designs for their projects.

San Francisco's Redevelopment Agency staged a nationwide architectural competition to select the designs. The Agency's aim was to provide developers with high quality site design, architectural excellence and economic practicality.

The Agency will offer property on the 22-acre site in the center of the city on October 24. It is part of the Diamond Heights project.



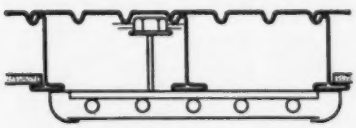
New roof systems for schools . . . by INLAND



T-STEEL — New! Galvanized. For clear spans to 32'0". Adaptable to acoustical and flush, luminous ceiling treatments. Provides superior diaphragm to transmit seismic and wind loads.

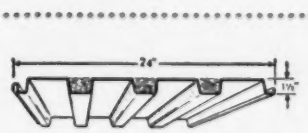
Ceiling Treatments with T-Steel Deck

Standard Tile or Board — Light Diffuser

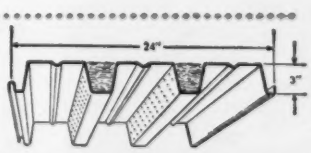


Surface-Mounted Fixture

Lath-and-Plaster Fireproofing



TYPE B ACOUSTIDECK — For purlin spacings from 6' to 10'. Uses minimum of 1" rigid insulation board.



NEW! N-ACOUSTIDECK—Steel deck and acoustical ceiling in one panel. For spans to 16'0". Noise-Reduction Coefficient, .70.

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Especially suitable over classrooms of 26' to 32' spans —or other areas where you want an attractive unbroken ceiling surface.

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Munich's new $7-million viaduct and its connections will break up a traffic bottleneck.

Viaduct Prestressed Two Ways

Clamp-type coupler joins prestressing wires of cellular deck.

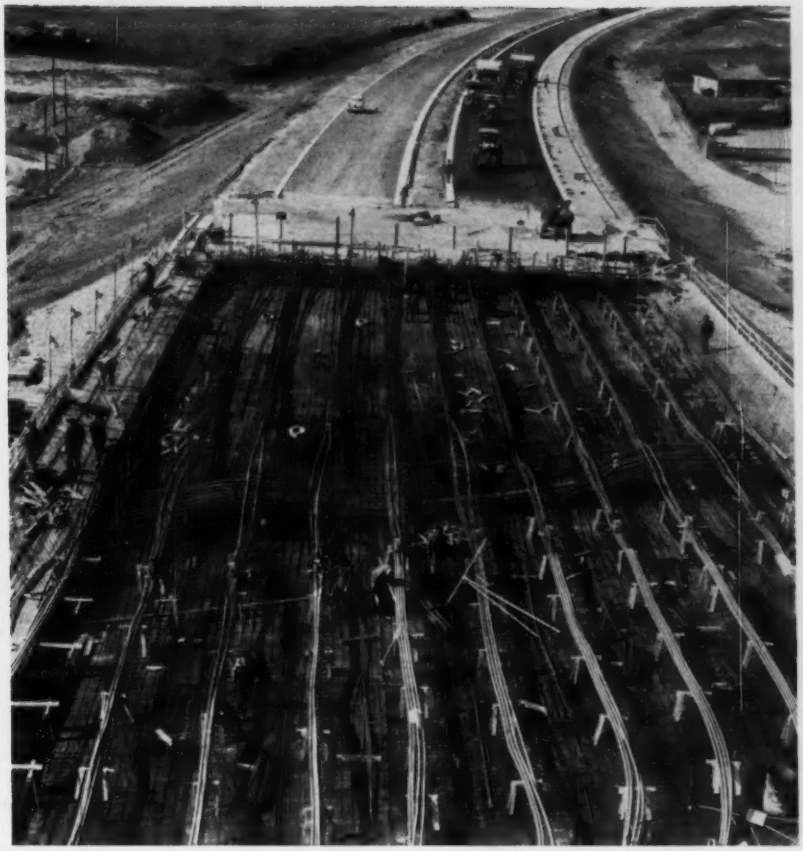
A 28-ft-long railway bridge spanning an approach road snarled up traffic moving toward the heart of Munich from the Berlin autobahn. An estimated 30,000 vehicles per day had to squeeze through the bottleneck.

To solve the problem, the West German government spent $7 million and 21 months to build a five-mile road network.

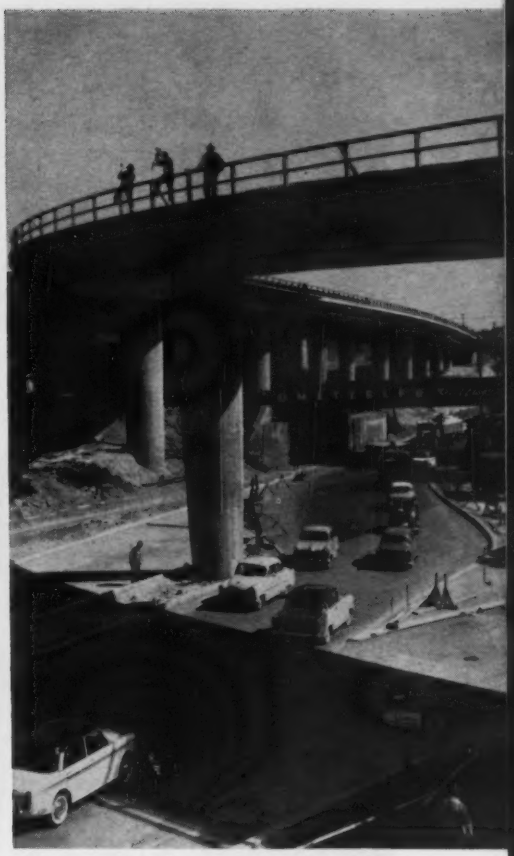
Overpass and approaches to the road complex called for the erection of 13 small bridges, plus a big bridge over the River Isar.

The major structure is a 3,000-ft long elevated highway that carries as many as eight lanes of traffic over two lower ramps and the railroad. Its concrete superstructure is a multi-compartment box girder that is prestressed both longitudinally and transversely.

Fifty-three slender, tapered piers support the roadway, which is on a long curve of varying radius and 3% grade. The width of the deck varies from 87 to 150 ft. The 20 spans of the elevated structure range in length from 85 to 133 ft. The average height of the deck above ground is 21½ ft.



Tendons prestress concrete deck of elevated highway both ways.



Short RR bridge jammed traffic.

Beats Traffic Problem

• **Design**—Engineers designed the elevated structure to be built a span or more at a time, cantilevering simultaneously both ways from the widest section (150 ft). This concept permitted design of the elevated structure without transverse joints. The widest section is located at one side of the longest span (133 ft), where the structure crosses the railroad. The subsoil at the rail crossing is a terrace coarse gravel that permits the use of short square piles under the piers. Cast in place piles support the piers where main sewage pipes pass underground.

Designers first considered the use of a frame structure formed by the concrete slab of the span over the tracks and the row of piers on each side as a fixed anchorage for the remainder of the structure.

Subsequent calculations showed that stresses due to deformation of the superstructure by creep and shrinkage would be too high for safety. They then chose one of the interior piers of the row of four on one side of the railway as a fixed anchorage for the whole superstructure.

About 48% of the bridge dead load is on one side of the anchorage; remainder on the other. One side of the structure rests on 27 piers; the other side on 22 piers.

Designers took into consideration an appreciable amount of transverse movement over the piers because of transverse prestressing; expansion and contraction due to temperature change; and the inevitable plastic deformation. At the widest point, computed expansion and contraction amount to about $\pm\frac{1}{2}$ in.

Engineers provided one longitudinal row of piers with bearings designed to take only longitudinal movement of the superstructure; a second, parallel row of piers has bearings to take up both longitudinal and transverse movements. Simple pinned bearings were used at all piers and multiple roller bearings at the abutments.

• **Prestressing**—The first step in construction was to build the span over the railroad. The contractor used the Holzmann SH 113/32 tensioning system throughout the structure. This system uses oval-shaped wires, each with a cross-sectional area of 0.06 sq. in.

Over the railroad, workmen prestressed the superstructure from both ends. Couplings used in other portions of the viaduct allowed longitudinal stressing from one end only.

The contractor devised a unique method to maintain the wires parallel within the tubes containing groups of wires. Holzmann engineers designed a wheeled "comb" that ran the length of the cable to prevent the wires from twisting or being pinched. The method was particularly effective at coupling positions where the number of wires was doubled. Workmen used a molybdenum disulfide compound to lubricate the coupler bolts and give maximum clamping effect.

Initially, workmen "manhandled" the combed and sheathed stressing cables into position. Carelessness in handling kinked and cracked many of the sheet metal sheaths. Engineers then built a 100-ft long harness suspended on rope slings. A truck crane handled the rig to move and place the stressing cables.

Holzmann engineers ran into trouble at the coupling points. The large sheet metal boxes surrounding the couplers reduced the effective cross sectional area of the diaphragms so drastically that

GAR-BRO helped cut costs in pouring concrete piers!

One contractor cut the time in placing concrete on this bridge job by planning ahead. Here, on these two bridge piers, note that he used three complete units comprised of Gar-Bro Collection Hopper and a string of Steel Chutes plus a Gar-Bro Bucket. He used the hopper and chutes to direct the concrete into the forms and prevent segregation.

His object was to prevent any delays by using one hopper and chute unit to place concrete in one pier, while the second one was set in place in the other pier, and the third one (see it hanging in rack between piers) was being shortened. Delays of transit mixers and the crane were minimized by rotating the hopper and chute units and shortening the chute line to the new level of the concrete in each pier.

It's a good idea to team up your Gar-Bro Concrete Handling Equipment to save time and cut costs.

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. . . Prestressed viaduct

the diaphragms had to be widened at these points.

On future projects they will use smaller couplings to eliminate grouting and sealing problems.

Lugs on the sheet metal boxes around the couplings were bolted to the pins that centered the hydraulic jacks used in stressing. Workmen packed foam rubber between the sheet metal box and the face of concrete and used concrete plugs at the joint between the box and the sleeve.

The concrete plugs did not stand up well under hard usage; most of them had to be repaired before final casting of the concrete.

Depth of the cellular deck varies from 2½ to 4½ ft.

Internal vibrators compacted the concrete, with an additional vibratory screed used on the deck surfaces. Form boards used at visible faces were coated with plastic and laid edge to edge so that no finishing was necessary after removal of the forms.

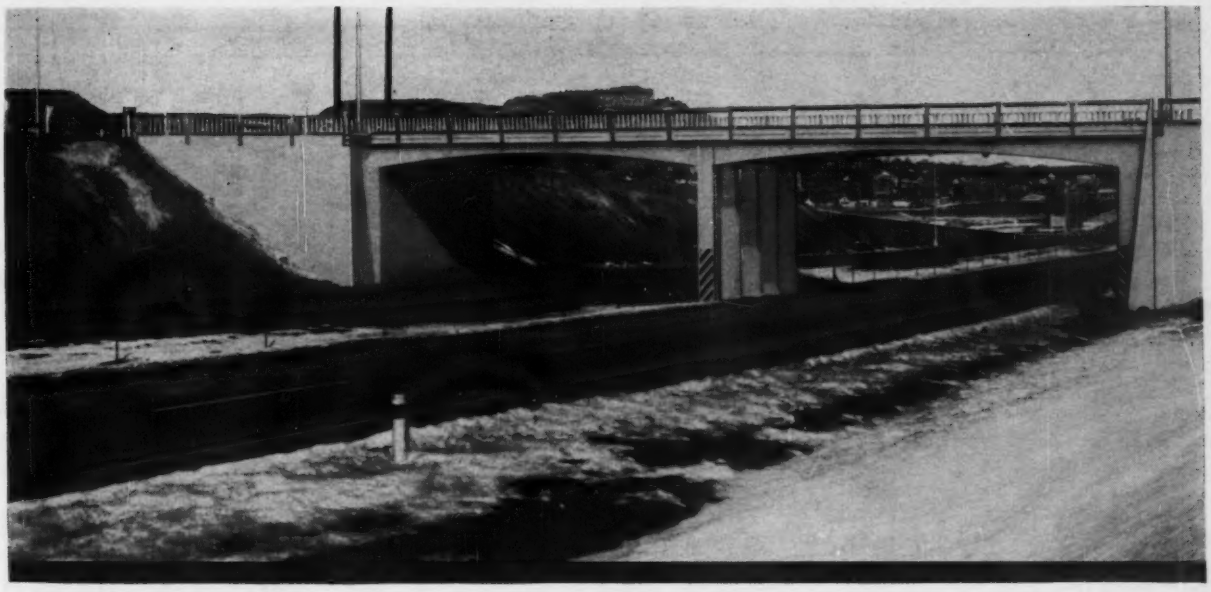
• **Piers**—The tapered piers rest on relatively short, square precast concrete piles driven into a layer of coarse gravel. Where the piers are located over sewage mains, the engineers used cast-in-place piles. The contractor kept the pier taper and dimensions as uniform as possible to permit repetitive use of forms with as little modification as possible.

The four forms used for casting the 53 piers were split so that the height of the form could be varied from 26 to 43 ft. No side bracing was needed to keep a form vertical. A series of anchor lugs embedded in the concrete piles carried loads from the forms and the concrete.

• **Roadway surface**—Workmen applied a 0.039-in. thick layer of ribbed copper foil to all roadway concrete surfaces except the western approach ramp. They covered the foil with a 2¼-in.-thick course of asphaltic paving mixture.

The western approach ramp has a grade of more than 6%. This presented the problem of possible creep of the asphaltic mixture down the grade during hot weather. To make sure this doesn't happen, the contractor paved this ramp with "Vabit," a fine asphaltic concrete developed and patented by Vago of Thurgau, Switzerland.

Philip Holzmann A.G. of Frankfurt was prime contractor for the viaduct. Major subcontractors were Beton und Monierbau A.G. and Held & Francke Bau A.G., both of Munich. Resident engineer for Holzmann was Alfred Weser, with Kurt Wismer as general superintendent.



Restricted site problem solved with **REINFORCED CONCRETE**

A country club on one side . . . a river on the other . . . restricted the construction site for this interchange bridge in Trinidad, Colorado. To overcome this problem, Ken R. White, Inc., Consulting Engineers, designed for reinforced concrete. A closed abutment frame was used to eliminate the need for approach spans. If you have a design or construction problem, you too may be able to solve it more readily with reinforced concrete. On your next project, investigate this versatile, low-cost, timesaving construction material.

Concrete Reinforcing Steel Institute
38 South Dearborn Street, Chicago 3, Illinois

Interchange Bridge over Interstate Rt. 25, Trinidad, Colorado
Owner: Colorado Department of Highways
Designers: Ken R. White, Consulting Engineers, Denver
Contractor: Dominic Leone, Trinidad, Colorado

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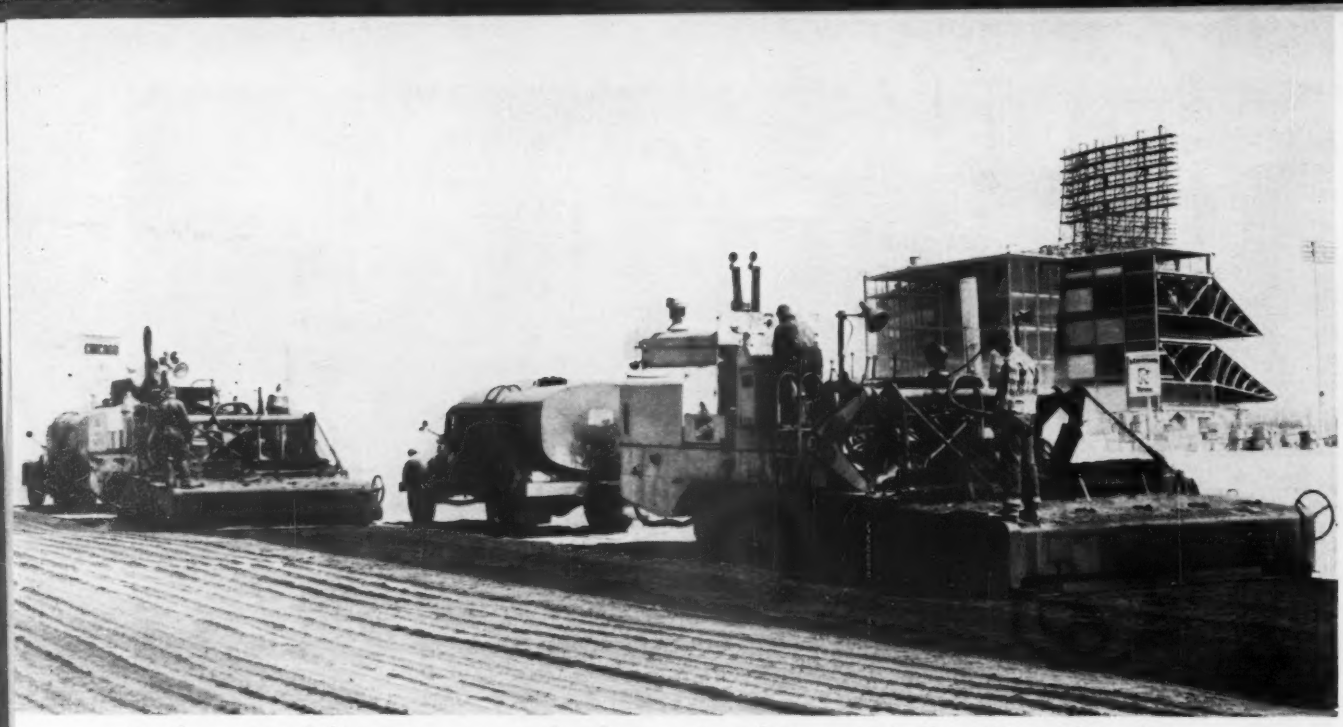

Single-pass stabilizers team up to lay base course for a new ball park's parking lot.

Foamed Asphalt Permits Earlier,

Foamed asphalt permitted the paving of a 68-acre parking area for the Minnesota Twins' ball park outside Minneapolis about a month earlier than the builder could have tackled the work using regular asphalt. It wasn't necessary to wait for warmer weather and drier soil.

When the work began, self-propelled, single-pass stabilizers, adapted to use the foamed material, paced a fast paving job.

Working together, the machines processed over 2,500 sq yd of 3-in.-thick stabilized base per hour. Other equipment compacted the base, sealed it lightly with an asphalt fog, then applied an armor coat of pea gravel. The best day's production was 22,500 sq yd processed, compacted, sealed and surfaced in only 10 hours, using a 20-man crew.

One machine processed a 12-ft width; the other, a 10-ft strip. They traveled about 25 ft per min. Both stabilizers were P. & H. standard models, modified by adding equipment to produce the foamed asphalt.

FOAMED ASPHALT BASE STABILIZATION—LABORATORY ANALYSIS AND DESIGN MIX

MATERIAL: Natural sand, called "stadium sand".

GRADATION (washed sample):

Sieve No.	40	80	200
Percent passing (total)	89	33	14

SPECIFIC GRAVITY: 2.53

LABORATORY MIX (prepared in pug mill mixer fitted with foamed asphalt system):

Stadium sand (10% moisture content)	96%
Asphalt cement (185 penetration)	4%

Physical properties:

Hubbard Field Stability:	
At 77 deg F.	5,600 lb
At 140 deg F.	4,800 lb
After 1 hr immersion in water at 140 deg F.	2,900 lb
Moisture absorption (fully submerged for 24 hr in water)	2.4%
Voids in compacted specimen	17 %
Unit weight (lb per cu ft)	123
Satisfactory resistance to 10 cycles of freezing at —30 deg F and thawing at 77 deg F, at 80% relative humidity	

DESIGN MIX (average field proportions):

Asphalt cement (AC-1) 220 penetration	4.5%
Moisture content, existing sandy material	8.0%
Fog seal (MC-0 asphalt)	0.10 gal per sq yd
Armor coat (RC-3 asphalt)	0.25 gal per sq yd
Screened pea gravel	25 lb per sq yd

• **What is foamed asphalt?**—When an asphalt cement is "foamed" by injecting steam it acquires unusual properties, according to Prof. Ladis H. Csanyi, in charge of Iowa State University's Bituminous Research Laboratory. Mr. Csanyi developed the foamed asphalt process, made the laboratory analysis (see table) and designed the mix.

With foaming, the asphalt cement's volume and viscosity increase. It sticks tighter to moist aggregates. And it becomes softer at lower temperatures, and remains softer longer than non-foamed asphalt. In this case, the contractor used 220-penetration asphalt cement.

The engineers chose foamed asphalt for stabilizing the base because:

• Construction crews could work with wetter soils.

• They could work in colder weather (50 deg F minimum).

• They could compact the base soon after processing, thus assuring completion earlier this summer.

By using the foamed asphalt process, E. L. Miller, vice-president of the Jay W. Craig Co., could start his base-stabilization operations a month earlier last spring than if he had used non-foamed asphalt cement.

• **How they did it**—After the area has been cleared of vegetation, it was deep-disked. Patrol graders and a land-leveler then shaped it to proper profile for surface drainage. A 30-ton pneumatic tired roller compacted the soil. The

Boiler yields steam for foaming.

Faster Work

two stabilizers then processed the top 3 in. of soil with foamed asphalt.

A pair of 9-wheel pneumatic tired rollers compacted the freshly mixed material lightly to prevent the patrol grader, which followed, from rutting.

The remaining finishing operations followed in sequence. A patrol grader windrowed the top inch of mixed material so the bottom 2 in. could be compacted with three passes of a 12-ton pneumatic tired roller. The grader then laid the 1-in. layer back and the roller compacted it in three passes.

A 10-ton steel wheel roller made one pass to give additional compaction and to provide a smooth surface. The builder compacted the stabilized base to 100% of maximum density in accordance with AASHO test method T-99.

Two pressure distributors then went to work. One applied 1/10 gal of asphalt fog seal (mc-o) per sq yd, immediately after the finishing operation. Later, the other applied ¼ gal of RC-3 per sq yd for the final armor coat. Workmen then applied about 25 lb of pea gravel per sq yd.

A 12-ton pneumatic tired roller and a 10-ton steel wheel roller each made four passes to complete compaction.

• **Stabilizer modification**—Harnischfeger engineers modified each standard model stabilizer by adding a 10-hp steam boiler. Special foamed asphalt spray nozzles and a steam manifold were

PNEUMATIC ROLLER and motor grader shape existing soil and compact it to required density. Parking area will accommodate 14,500 cars.

STEEL WHEEL and pneumatic rollers follow motor grader in shaping and compacting material processed by stabilizers.

SELF-PROPELLED SPREADER applies pea gravel over RC-3 asphalt for final armor coat of 68-acre initial section of a planned 110-acre parking lot for Minnesota Twins.

O'Hare-Chicago Motor Hotel, Chicago, Illinois. Architects: Arthur Swanson & Associates, Skokie, Ill. Contractor: H. Andrews & Sons, Inc., Chicago, Ill.

Space provided: main lobby, gift shop, vestibule, registration desk and office, carport. *Structural framing:* glulam beams spaced at 6'-8", resting upon glulam columns. Butterfly beam-and-column bents placed in pairs and spaced at 16'-5" and 21'. *Exterior walls:* weathered lannon stone with light weight concrete backup. *Interior walls:* stone and vertical wood paneling. *Floors:* carpeting over reinforced concrete slab; terrazzo in vestibule. *Roof:* 4-ply built-up surface over 3" insulating board. *Lighting:* incandescent and fluorescent. *Heating and ventilating:* combination heating and cooling of gas absorption type, using central type installation with individual thermostatic controls for each room. *Area:* framed by glulam timbers, 7,675 square feet including carport.

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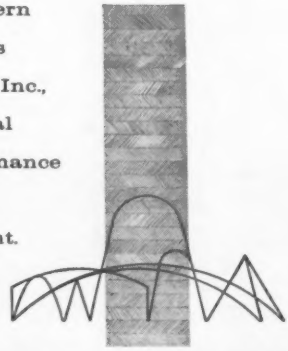

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added to each machine in place of the standard asphalt spray nozzles.

The hot asphalt entered through a second manifold into the nozzles. At the same time steam flowed into the nozzles through small tubes. The asphalt and steam came in contact in the throat of the nozzle, producing the foaming action.

Each stabilizer carried its own 300-gal water tank and a 225-gal asphalt tank, as standard equipment. By hooking the 300-gal water tank to the small water tank on the boiler, the stabilizers could operate half a day.

• **Stabilizer operation**—Each stabilizer mounts four rotors in its processing chamber. The first rotor, at the front of the chamber, cut and pulverized the material to be processed.

The second rotor blended the material and trimmed the subgrade to exact depth. It rotated counter to the first, picking up the material and passing it on to the third rotor.

At this point the manifold nozzles injected the foamed asphalt into the thin layer of material under an asphalt pressure of 25 psi, and a stream pressure of 40 psi.

The third and fourth rotors are pug mill type, with wide faced paddles. They rotated in opposite directions, batting the material back and forth in the final mixing process. An adjustable tailgate spread the material to a uniform depth ready for compaction.

• **Heating the asphalt**—Two 5,200-gal tank trucks carried the asphalt from tank cars about 10 miles to the site.

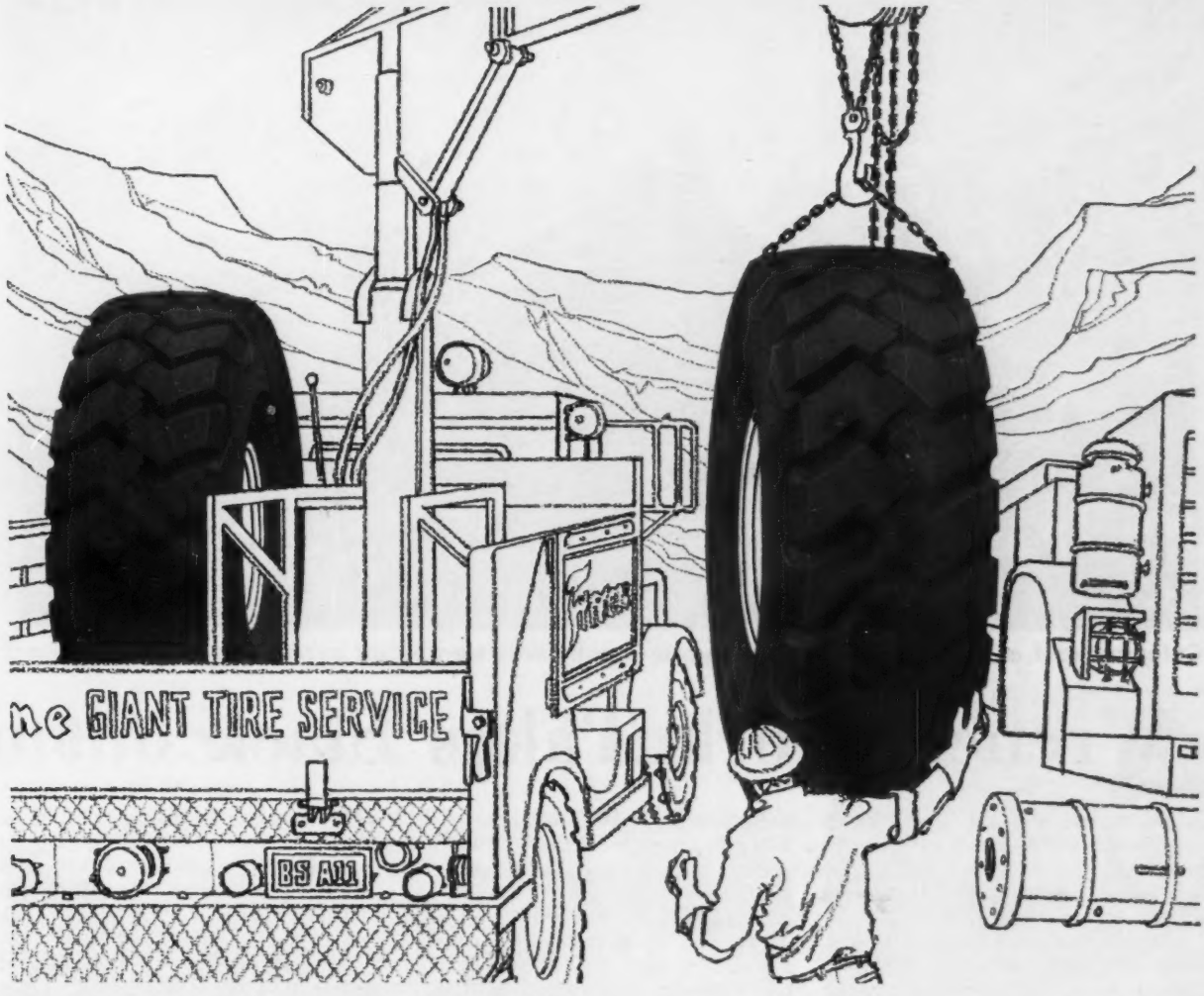
The contractor set up his asphalt re-heating terminal just across the road from the paving area. It included one 10,000-gal storage tank and two tank car heaters with asphalt pumps.

The temperature of the asphalt on arrival averaged 345 deg. F. It was pumped through one of the heaters into one end of the storage tank and out the other end through the second heater into a 1,500-gal "nurse" truck.

Craig's lump-sum contract with the Metropolitan Sports Area Commission totaled $258,000. Of that amount, $235,000 covered site preparation and 330,000 sq yd of stabilized base complete with surface treatment.

The remaining $23,000 covered the construction of a boundary road, paving eight entrances and miscellaneous work. Workmen built the road and entrances of 1½-in. bituminous concrete on a 4-in. bituminous stabilized base.

The entire base ball park covers 161 acres. Of that area, 110 acres will be devoted to parking facilities. Parking spaces will be provided for 14,500 autos, 170 buses and 40 taxis, according to The Cerny Associates, Minneapolis, architects and engineers on the project.



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Catenary roof of a grain-storage building at Omaha was torn by an avalanche of snow.

Wrench Work Takes Slack out of

An unusual roof—the largest of its type in the world—has in turn needed an unusual repair job at the 10-million-bushel terminal grain elevator of Cargill, Inc., at Omaha, Neb.

The job involved pulling a one-piece, 14-ga steel sheet, 300 x 170 ft, into a catenary in a single operation. Among other things, the job necessitated 32,760 nut turns, each at the rate of one full turn—no more and no less—at a time.

• **Hanging roof**—The roof, designed by Cargill, consists only of the sheet metal; it has no secondary support. It is fastened at the ridge, 135 ft above ground, and to 20-ft-high walls paralleling the ridge 85 ft away. Between the two fastening points, the sheet, hanging free, drapes like a tent.

The roof, made up of 6 x 16-ft sheets welded together, weighs 79 tons. At the top, the sheet is secured to a structural steel member. At the bottom, or eave portion, it ties into a combination concrete spreader beam, gutter and bin cap that runs the 300-ft length of the structure. The beam, in turn, is anchored by reinforcing steel into the elevator's reinforced concrete wall, which consists of a linked series of semicircles.

• **Avalanche overwhelms roof**—Circumstance combined with weather last winter to bring mishap. While the 23-year-old roof has borne heavier loads of snow—notably in 1948—it was never before called upon to withstand a weather pattern as perverse as last year's. The weather approached or set records in: total snowfall (33 in.); consecutive days of an inch or more of snow on the ground (66 days), and days of precipitation (68 out of 79 days from Jan. 1 to Mar. 19).

This pattern had a double consequence. Water, in the brief thawing periods, trickled down to the gutter and froze, gradually building up a wall of ice that reached ever higher up the roof's face. Meanwhile, snow piled ever thicker on the roof.

The climax came when a sudden brief thaw warmed the snow and kicked it loose. It slid down the ski-slope-steep roof in a mass of near-avalanche volume and speed. The snow hit the wall of ice and was jerked to an abrupt stop. The twin forces of snow weight plus impact momentum ripped the roof loose.

A 40-ft section of the metal was torn along the ridge line. And major damage occurred at the lower edge of the roof along the spreader beam. The beam's anchor rods jerked at the bin's walls into which they were anchored. The walls, which had been subjected to the normal deterioration and weathering of three decades, spalled and gave way also.

Loosened, the anchorage was pulled inward 36 in. and the entire roof sagged a total of 10 ft.

• **How to repair the damage?**—With the bin's contents of 900,000 bu of grain exposed by the mishap, the first thought was temporary repair. Cargill made the roof weathertight with temporary, galvanized flashing and tarpaulins.

Thought then turned to permanent protection of the bin's contents. Three plans were considered. They were:

• Build a new roof using trusses. This would have involved emptying the bin and losing its use while work was going on. Total storage space would be substantially reduced by the space taken up by the trusses.

• Take off the roof and replace it in the manner it was built. Sheets would have to be welded into strips on the ground and lifted into place to be joined to the portions already installed. This method also would have prevented use of storage while work went on. In addition, the resistance offered by one side of the inverted V roof to the other would be lost during reconstruction.

• Stretch the roof back into place with an assembly that would become a permanent part of the elevator structure. This approach removed any need to empty the bin; grain would remain undisturbed and protected while work went on. Design capacity to the roof would be increased from 15 to 30 psf by the permanent strengthening. The cost promised to be about half that of either of the other methods. Cargill adopted this plan.

Steel A-frames were erected to take the thrust needed to pull the roof back in place.

Sheet-Steel Pup Tent

Bolts welded to plates link sheet-steel roof with A-frame.

Wrenching finished the repair.

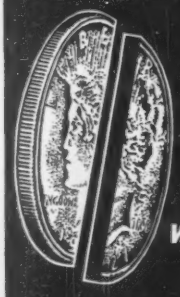
• **Replacing the roof**—Western Engineering Co., a subsidiary of Foster-Smetana Co. of Omaha, accomplished restoration with a series of steel A-frames set up on both sides of the building. The frames were connected to the roof deck with long bolts. Tightening nuts on these bolts on the side where the failure occurred pulled the roof back into place.

The A-frame assemblies needed 100 tons of structural steel. Each frame is a right-angle triangle, 25 ft high and 49 ft long. It has a 12WF65 for the base and vertical leg, 12WF40 for the diagonal member and 10WF53 for intermediate brace. Western installed 11 of the A-frames on each side, 29 ft c-c.

Because engineers calculated the force acting on each A-frame to be 100 tons, Western put in substantial foundations. Each vertical leg, to take 50 tons, stands on three creosoted timber piles, each 55 ft long. The sloping leg is bolted to a 50-ton concrete counterweight.

Two 24WF76 sections extend the length of the elevator and are mounted on the apexes of the A-frames. These members were set, one above the other, with webs horizontal. They were spaced far enough apart to permit roof bolts to go between them. The bolts were threaded through plates on both flanges and backed up by short

(*Please turn the page*)



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			MAXIMUM	MINIMUM
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G-120A	6″	110	3500	105
G-160	6″	150	2750	82
I-200	8″	210	2000	54
FR-300	8″	325	1250	54
J-400	8″	480	780	60

PUMP TYPE	UNIT O. D.	DESIGN CAPACITY GPM	DESIGN LIFT HEAD IN FEET	
			MAXIMUM	MINIMUM
GB-600	10″	600	600	60
KG-725	10″	800	490	69
N-500	10″	425	1100	30
N-750	11″	(c)600*	1000	30
		(a)700		
P-1000	12″	1200	1000	46
R-1500	14″	1800	700	65
T-2000	16″	2250	600	85

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lengths of channel at the outer flanges.

To connect the A-frames and the roof deck, Western inserted 130 bolts, 2 ft c-c. The bolts are 1⅛ in. rods, 11 ft long. The outer end, which runs through the A-frame assembly, is threaded for 3 ft with seven threads to the inch.

Western took into account the 2,900 tons of force the bolts exerted on the metal sheet, which is only 0.0747 in. thick. The contractor welded a plate to each bolt and attached the plate to the deck with multiple bolts. The plate backed against the channel to which the deck was originally fastened.

Before stretching the sheet metal, Western repaired the 40-ft rip at the ridge line. The torn part was reinforced its entire length by ⅜ in. sheet welded and bolted into place. Welding was carried out under a requirement that prohibited sparks because of the danger (always present in an elevator) of a dust explosion. To meet the requirement, the contractor built a portable enclosure to place around welders to contain sparks.

Western used care to keep everything secure during the stretching operation and to guard against a repeat failure in the future.

To prevent the faulty section from tearing loose at the ridge while being stretched, Western tied it to the other roof section. This was accomplished by bolting and welding triangular plates 4 ft c-c to the roof deck and welding to them ⅜ x 5 in. straps that ran from one sloping roof section 27½ ft across the flat apex to the other sloping roof section Force applied to the faulty section was thus offset by the weight of roof on the other side.

The bolts on the A-frames on the unaffected side of the roof were stressed for stabilization to guard against repetition of last winter's mishap.

Pulling the metal skin back into place was routine, though tedious. Five men with wrenches tightened the nuts on the 130 bolts. All swung their wrenches in unison until they achieved a full turn of the nut and then moved on to the next five bolts for a repeat performance. Since each wrench swing was 120 deg, they had to swing three times per nut turn. The deck flexed as it came back into shape, and the movement, over this large expanse, set off noises like the roll of summer thunder.

Tightening the bolts under so exacting a regimen required three days before the dispirited sag of the roof was transformed into the graceful curve of the catenary.

Cyriel Van Severen was superintendent for Western, Edward T. Foster is president of Foster-Smetana. In charge for Cargill were Jim Swendsen, project engineer, and George Carey.

Five concrete steps to urban renewal

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A new Civic Center, replacing seven square blocks of slum area. Its five superb buildings create a new focal point for civic activities—and for future downtown development.

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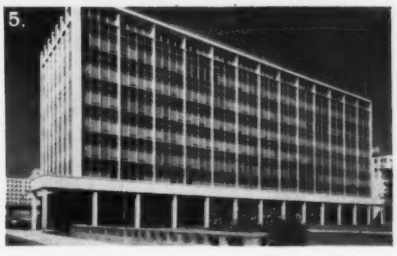
New Orleans' new Civic Center is an impressive guidepost for urban renewal anywhere. The cement? Lone Star Portland throughout.



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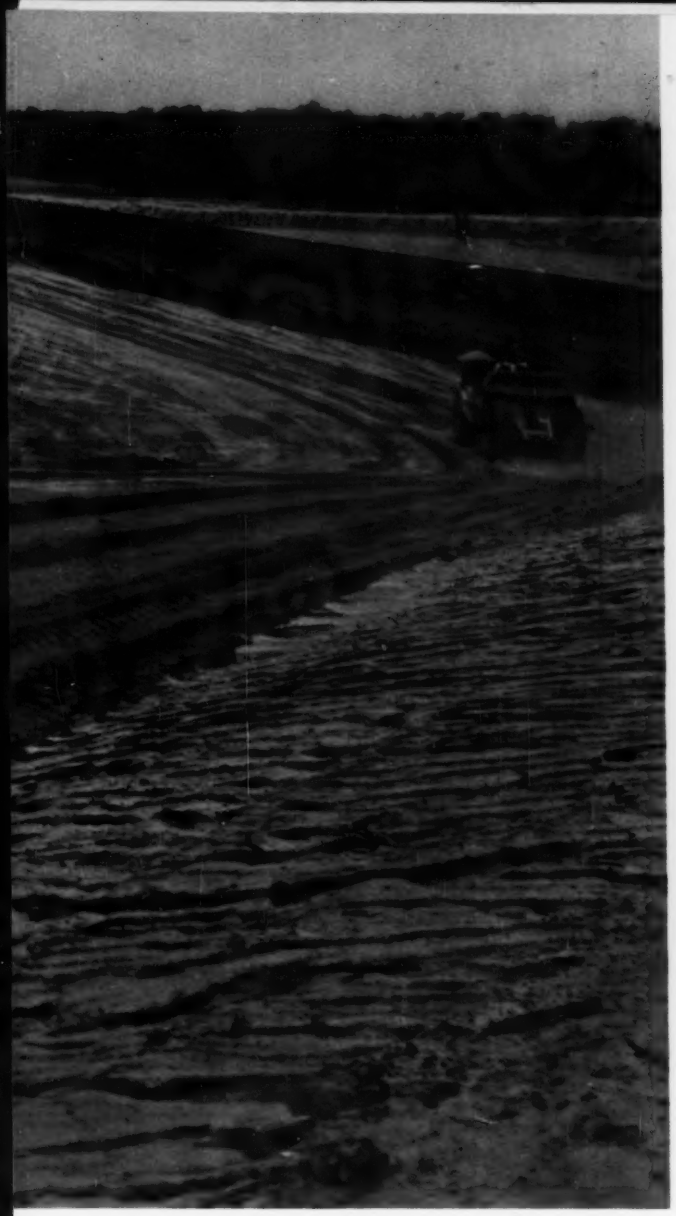
Contractor on $60 million dam improves with just three Gulf lubes . . .

When McGee Bend Dam, Jasper, Texas, is completed, it will form the largest lake in the state (114,500 acres, 560 miles of shoreline). The mammoth earthen dam will be 19,430 feet long and rise 120 feet above the Angelina River.

Cosmo Construction Company, Houston, Texas, has already completed river diversion work and is now working on a part of the dam itself. The former required removal of 330,640 yards of unclassified material. The latter calls for moving 1,600,000 yards of selected fill.

The simplified lubrication program developed for all equipment on this project requires only three Gulf lubricants, plus a hydraulic oil. Adoption of this program has resulted in lower lubricant handling costs, elimination of application errors, and improved maintenance.

Gulf Super-Duty Motor Oil is used as crankcase oil for all equipment. Mr. Charles Kirl, Project Superintendent, tells why, "We've been inside a couple of engines to check on their condition and were pleased to see how clean they were." The other



Fuel and lube storage is located near access road that runs between borrow pit and dump area.

Left to right: T. H. Chambers, Gulf Representative; Charles Kirl, Project Superintendent, and Ray Baldwin, Gulf Distributor, discuss results of simplified lubrication of equipment used in project.

Two scrapers climb access road on way to borrow pit. The dam will stretch better than 19,000 feet across this valley.

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A Big Radio Eye Down Under

Construction of a 210-ft radio telescope designed to peer 10 times deeper into space that has been possible with any existing instrument nears completion in New South Wales, Australia.

Located near Parkes, 200 miles inland from Sydney, the $1.8-million telescope is under construction for the Australian Commonwealth Scientific & Industrial Research Organization (CSIRO).

Officials say the initial 10-year program for the installation calls for plotting the strength and source of radio waves in space, southern hemisphere tracking and contact with satellites and space probes.

In 1956, after producing detailed specifications for the telescope, CSIRO engaged Freeman Fox & Partners, London consulting engineers, for the structural design. The German firm Maschinenfabrik Augsburg-Burnburg A. G. won the construction contract.

The welded, steel frame antenna revolves on a 37 ft 6 in. dia track. It sits on a combined reinforced concrete foundation and three-story equipment building, 30 ft high and 50 ft in diameter.

Eventually, CSIRO will build other instruments at the site plus permanent workshops, living quarters and an airfield. One of the instruments will be a 60-ft-dia radio telescope that will move along several miles of rail track while working in conjunction with the larger telescope.

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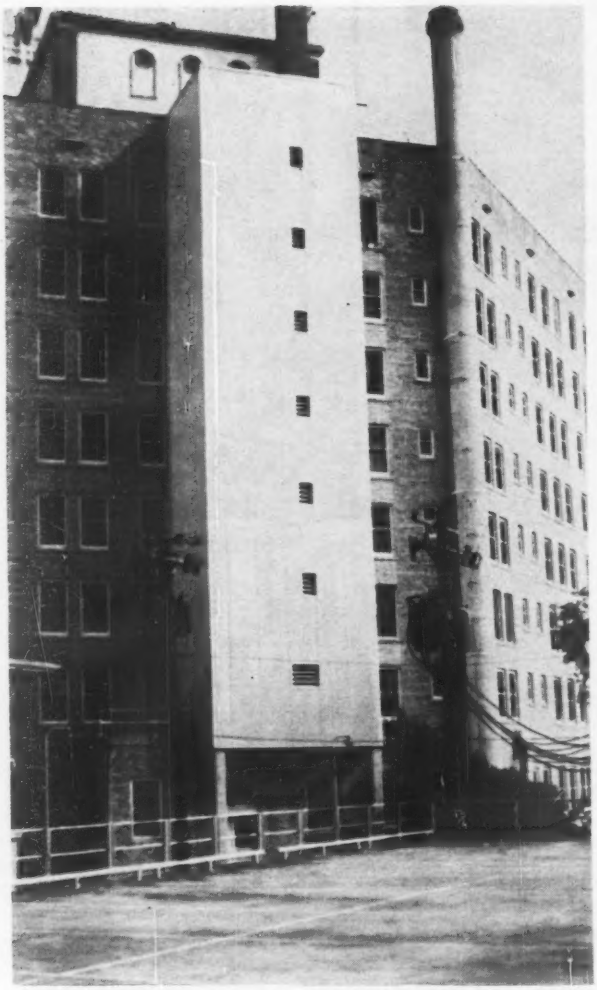
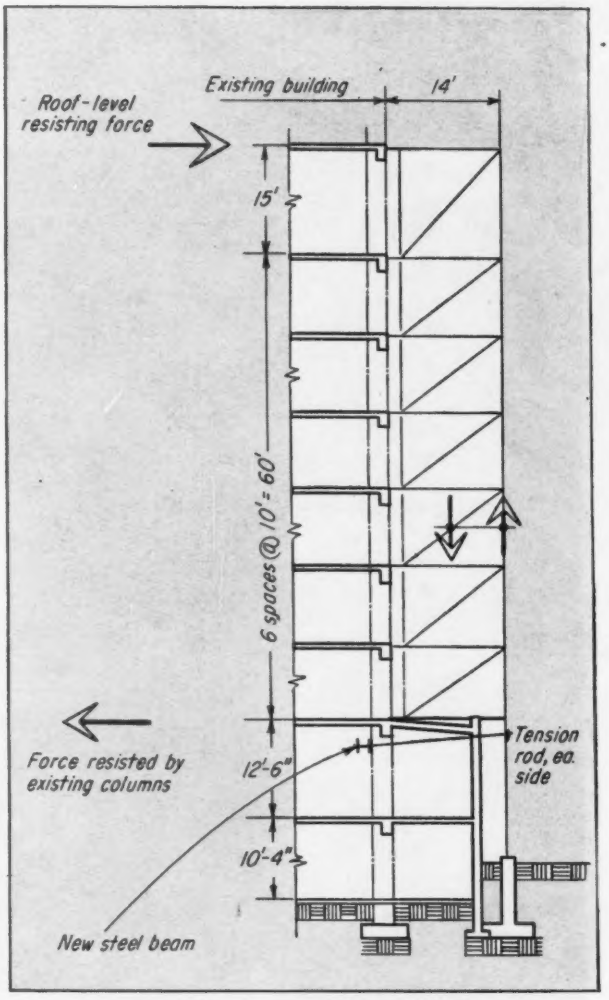


Steel-sheathed tower for air-handling units . . .



sits on two columns braced by hotel frame.

Tower Addition Leans Against Hotel

Herbert R. Petty & Arnoldo Longoria

A vertical truss system, eccentrically supported on two exterior columns, solves the problem of framing an eight-story tower addition where conditions precluded construction of footings adjacent to the existing building. The tower addition literally leans against the main building.

Houston's Plaza Hotel, built before the air-conditioning era, required an adjoining tower to house air handling units at each floor. Best location for the tower was at the rear of the hotel, above a lean-to structure housing a utility room and a loading dock. Interference from this appendage structure, including existing columns, piping and equipment, made it impractical if not impossible to install columns and footings adjacent to the main exterior columns and footings in the existing building. Moreover, analysis of the existing spandrel beams showed them incapable of taking additional loading.

Two exterior columns, with footings located outside the existing building, were designed to carry the entire tower load. Trusses in tower walls perpendicular to the existing building support all vertical loads. Tension diagonals in the vertical trusses prevent transmission of vertical loads into the existing building and also support the corrugated steel siding. Tower floor beams, compression members in the trusses, connect to existing spandrel beams with slotted holes to prevent vertical loading. Wind forces on the tower enter the hotel frame at each floor.

The concrete roof slab of the hotel frame and, to a lesser extent, the floor slabs transmit lateral forces comprising the resisting couple needed to prevent overturning. To provide the bottom lateral force of this couple, the designers specified tension rods carried back from the new columns and anchored in the existing building. The rods frame to a steel beam laid flat to provide maximum horizontal bending resistance, and framed in back of existing concrete columns just below the second floor spandrel.

Baxter Construction Co. of Houston was general contractor.

*The authors are design engineers with H. E. Bovay, Jr., consulting engineers of Houston. **Mr. Petty** was in charge of structural design on this project. Both he and **Mr. Longoria** are registered professional engineers in Texas.*

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Transite Underdrain Pipe means savings wherever subsoils must be stabilized. This new perforated pipe means savings to contractors, for Transite's long lengths, fewer joints, low material cost all add up to more profitable jobs.

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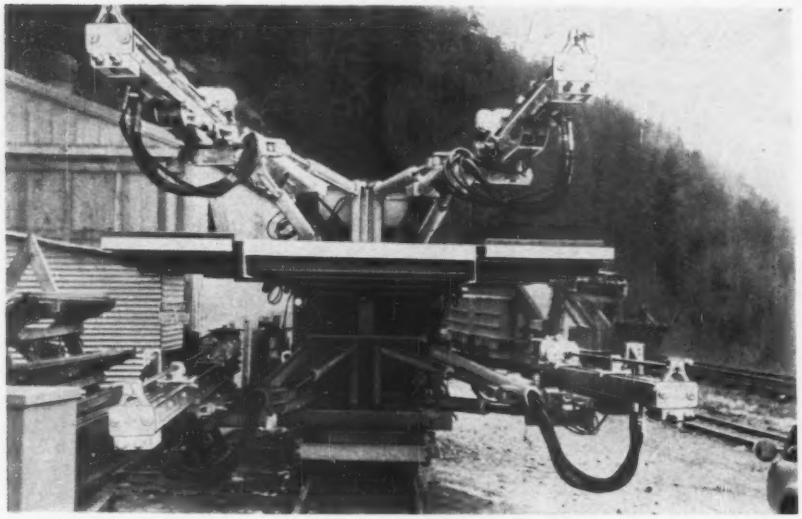
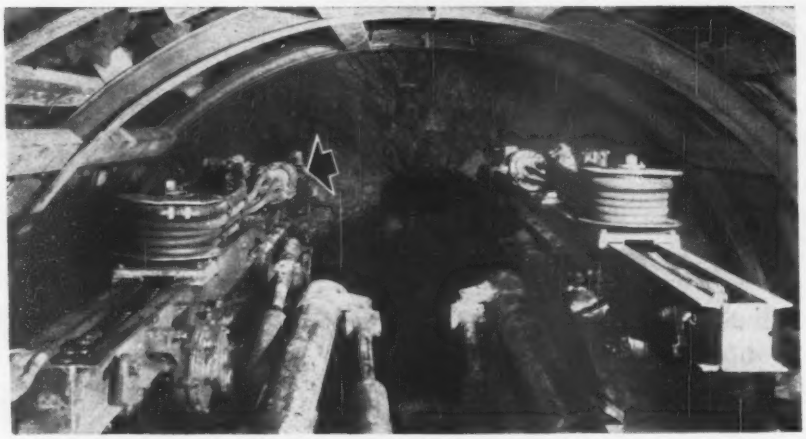
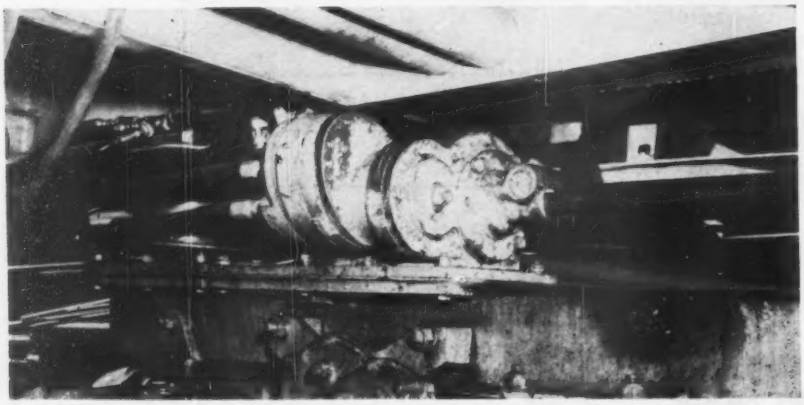
Rotary Percussion Rock Drill Makes Its



Both oil and air drive the four rotary percussion drills.



Drills have hose reels, oil-powered motor (arrow) . . .



. . . geared down for rotary action. Air supplies percussion.

Joy Manufacturing Co. says its new rotary percussion rock drill is drilling out rounds three times as fast as conventional percussion drills in a powerhouse tunnel at the Carmen-Smith hydro project near Eugene, Oregon.

The new drill combines the rotary and percussion drilling principles. Although this combination is not new in Europe, Joy claims this is the first commercial application of such a drill in the U. S.

The bore at the $26-million project is 17 ft in diameter and runs through dense to conglomerate-type basalt formations. Joy reports that four of the new hydro-jib-mounted rotary percussion drills on a rail-mounted jumbo advanced 1,550 ft in the first 51 days of tunneling.

The Joy drills work the upstream face of the 7,700-ft-tunnel, which will carry water from a dam on the Smith River to the Carmen powerhouse.

Five conventional percussion drills also mounted on a track jumbo work the downstream face of the tunnel and provide a good basis for comparison of the relative performances.

The five conventional drills average 2½ cycles per shift as compared to an average of 3¼ cycles per shift for the four rotary percussion drills. The jumbo equipped with the four RPD's needs one less operator.

The new drills have cut cycle time to as low as two hours, resulting in as many as four cycles a shift.

Crews using the rotary percussion drills drill out rounds of approximately 48 holes in 20 to 30 minutes. Occasionally, they complete a round in 15 minutes.

The conventional drills complete the same 48-hole rounds in an average of 60 to 90 minutes.

The RPD's have specially designed tungsten carbide bits to drill 1¾-in.-dia holes to an average depth of 8 ft. Crews flush the holes with about 4 gpm of 100-psi water, rather than air. Air consumption is half that of equivalent percussion drills, says the manufacturer.

Bit life has averaged 1,200 ft of penetration in drilling more than 60,000 ft of hole. No down-time has occurred on the RPD's in this footage.

Rate of advance averages about eight ft a cycle, with 10 cu yd of rock removed in each foot of advance. Mucking takes roughly 40 minutes, while

U. S. Debut

tunnelers use the remainder of the cycle to place rib supports, timber and track.

Joy first tested the RPD's on a 600-ft-long adit to the main bore. The rotary percussion rig drilled three times faster than any other drills used in opening the adit. They have continued this operating ratio in actual tunneling operations, Joy says.

The makers claim the rotary percussion drill penetrates medium hard formations faster than other drills. A hydraulic motor and reduction gears rotate the drill steel, while a relatively small air-powered free-piston unit provides the hammer blow. An automatic hose reel keeps all hose lines out of the way.

Torque and feed pressure are varied to meet drilling conditions making possible higher drilling rates in mixed formations.

The Eugene Water and Electric Board is building the Carmen-Smith project.

Bechtel Corp., San Francisco, is engineer on the job, which includes a second tunnel, 11,000 ft long, three dams and two powerhouses.

Incinerator Is Rigged To Handle Bulky Trash

Broken telephone poles, furniture and old railroad ties in addition to general refuse can be handled by a new incinerator.

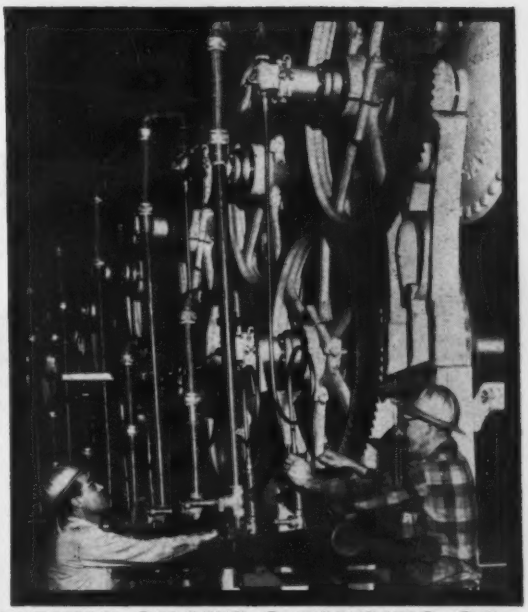
The refuse burner has a 20-ft-wide guillotine-type charging door to accommodate the bulky trash.

Capacity of the burner is 15 tons an hour. It measures 20x24x45 ft.

Two vibrating steel conveyors remove burned ash. A low-pressure fly ash collector is built into the incinerator stack. Collected particles are fed to the ash removal conveyors below the combustion chamber grates. This feature, coupled with smoke density measuring and control equipment, permits the incinerator to meet stringent pollution-control requirements.

The manufacturer claims a 15-ton-per-hour incinerator can be built for $700 a ton based on 24-hour operating basis. Or they claim the same incinerator with a 140x75 ft plant with storage and charging area can be purchased for $1,000 a ton at daily capacity. MODULE INCINERATORS, INC., 20 SOUTH 15TH STREET, PHILADELPHIA, PA.

READY TO ROLL



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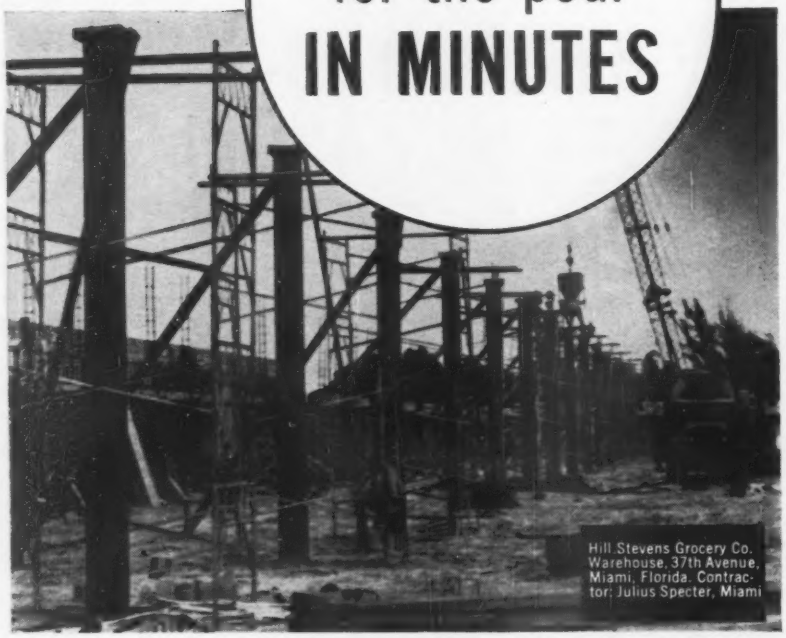

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Men and Jobs

ICBM Building Boss Moves; Hayes to Head CEBMCO

Now that the missile base construction program is back on schedule, the man who can take most of the credit for its return is taking a new job. Brig. Gen. Alvin C. Welling, Commander of the Corps of Engineers Ballistic Missile Construction Office (ENR June 8, p. 26), has been assigned as Deputy for Site Activation in the newly formed Air Force Ballistic Systems Division (BSD). His former vice commander of CEBMCO, Colonel Thomas J. Hayes has been moved up to fill the slot General Welling vacates.

CEBMCO, with headquarters in Los Angeles, is responsible to BSD for the nationwide construction of Atlas, Titan and Minuteman facilities for the Air Force.

Colonel Hayes, the son of a retired major general, graduated from West Point in 1936 and holds a master's degree in civil engineering from Massachusetts Institute of Technology. Before he was assigned to the Ballistic Missile Program in August 1959, he was District Engineer in Alaska, Little Rock and Omaha.

Building Research Group Elects Chatelain President

The Building Research Institute has elected Leon Chatelain, Jr., as president for 1961-62. He is senior partner in the Washington, D. C. architectural firm of Chatelain, Gauger and Nolan, and a past president of the American Institute of Architects.

Mr. Chatelain formed the present architectural firm in 1956. As an architect in the Washington area for the last 31 years he has designed, among others, the Kiplinger Office Building, the home office of Equitable Life Insurance Co., and many buildings for the armed forces.

Elected BRI vice presidents are Peter B. Gordon, vice president of Wolff & Munier, Inc., New York City; Harold D. Hauf, vice president for design and planning, Charles Luckman Associates, Los Angeles, and Graham J. Morgan, president of U.S. Gypsum Co., Chicago.

Briefs . . .

Public Works

James F. McManus has been named associate to **John F. Capaldi**, Rhode Island public works director. Mr. McManus, formerly senior road inspector in the department, succeeds **Ernest O. Maine.**

Nelson C. Jones has succeeded the late **Harold R. Puffer** as head of the Road and Bridge Division of the Michigan State Highway Department. He has been head of the bridge design section. Also in the highway department, **Edward A. Bellenbaum,** present assistant to the chief engineer, has been promoted to chief, Office of Planning.

Ned E. Williams, of Columbus, O., has been appointed chief engineer of the Ohio Department of Natural Resources. He has been serving as project engineer for the State Division of Water.

Robert T. Hosman, assistant district engineer of the Mississippi district office of the Tennessee Valley Authority at Tupelo, has been promoted to district manager of the western district with offices at Memphis.

Albert G. Lyons, head of the engineering and maintenance department of the New York Transit Authority's subway system, has been appointed vice president in charge of construction for the Philadelphia Transit Corp. He replaces **Leroy L. Olson,** dismissed in the wake of Philadelphia's municipal payola scandals. Another casualty of the scandals, **Harold V. Varani,** will be replaced as director of the Division of Architecture and Engineering by **Charles G. Day.** Mr. Day, currently warden of Graterford House of Correction, was a field engineer for Day and Zimmermann, Inc., engineer for the construction of the institution.

John J. Lynam has been appointed executive director of the Pennsylvania General State Authority, the state's construction agency. Mr. Lynam was assistant director of the authority and before that was associated with Matthew H. McCloskey, Jr., a leading Philadelphia contractor.

Paul H. Taylor, a 20-year veteran with the Bureau of Reclamation, has been named manager of the Upper Green River Basin office in southwestern Wyoming. He succeeds **B. L. Mendenhall,** who is taking charge of the Seedskadee project office at Fontenelle damsite in Wyoming.

David M. Walker has been named Urban Renewal Consultant to Massachusetts. He had been a Federal Urban Renewal Administrator from 1958 until last January when he opened his own offices in Washington, Philadelphia and New York.

Stanley D. Forsythe, general superintendent of the Chicago Transit Authority, has been named director of engineering and development for the National Capital Transportation Agency. The agency is drawing up a mass transit plan for Washington, D. C.

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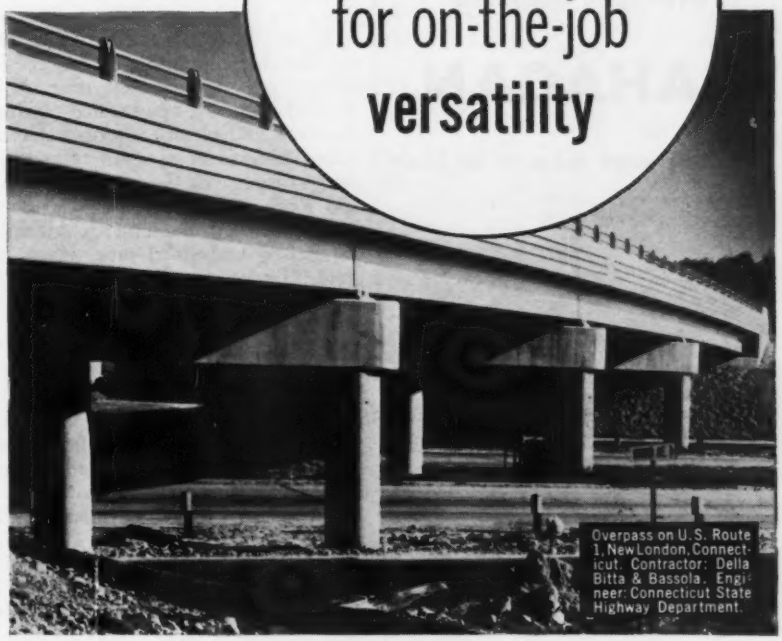

Overpass on U.S. Route 1, New London, Connecticut. Contractor: Della Bitta & Bassola. Engineer: Connecticut State Highway Department.

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No other type form, wood or steel, can match SONOTUBE Fibre Forms for quick, easy adaptability right at the job—in any structure where round concrete columns are specified!

Versatile SONOTUBE Fibre Forms can be sawed to proper length and cut to fit wall or beam forms. They can be drilled for tie-in rods or anchor bolts, and scored for utility outlets.

And, it makes no difference what kind of round concrete columns . . . full round, half-round, quarter-round, obround, or pilaster . . . by using SONOTUBE Fibre Forms, form them faster and more economically than by any other method.

Only Sonoco offers five types of forms — you choose the type that will meet specific job conditions most economically: "A" Coated—for exposed columns; Seamless—for extra-smooth columns; "W" Coated—for unexposed columns; Encasement Forms—for encasing existing members with concrete; Special — for use in water or excessive dampness.

Order low-cost SONOTUBE Fibre Forms from 6" to 48" I.D., in standard 18' lengths or as required.

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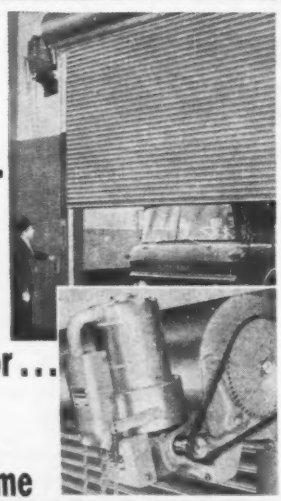

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Unit Prices

Three pipe alternates priced for . . . .

New York Water Transmission Main

A prestressed concrete cylinder pipe was the only alternate priced by the low bidder and was selected over a prestressed concrete embedded cylinder pipe and a steel pipe alternate for this water transmission main (except for river crossing) in Greece, Irondequoit, and Rochester, N. Y. But the second low bid all three alternates, including prestressed embedded pipe, where the steel cylinder is embedded in concrete before prestressing and then coated with ⅞ in. mortar.

A & J Fago, Inc., Tonawanda, N. Y., was low at $1,168,324, 5.8% under the second low, Spezio Construction Co., Inc., Rochester, and 8.1% under the third low. Metcalf & Eddy, Boston, are the engineers on this job for the Monroe County Water Authority.

The work includes a subaquaeous 380-ft long river crossing of class 250, 36 in. dia, prestressed concrete embedded cylinder pipe located in a gorge approximately 150-ft deep, with one bank rising on a 60 percent grade from the water's edge and the other at about the same gradient approximately 400 ft from the water's edge.

The main is half in streets and half in cross-country locations. Its primary job is reinforcing an existing system, and therefore has few connections to existing mains and no service connections.

Prevailing hourly wage rates include: backfill machine operator, $3.70; carpenter, $3.85; pipe layer, $3.05; plumber, $3.70; trenching machine operator, $3.70; and laborer, $2.875.

The bidding included:

1C	A. & J. Fago, Inc., Tonawanda, N. Y.	$1,168,324
2	Spezio Const. Co., Inc., Rochester, N. Y.	1,240,315
3	Marcelletti & Son Const. Co., Inc., Bedford, Ohio	1,271,400
EE	Metcalf & Eddy, Boston, Mass.	1,357,355

Bids: 5-1-61 Items	Unit	Quantity	Unit 1 C	Prices 2
Clearing	ls	job	$25,000	$38,000
Water mains, compl except appurt work other items,				
Pipe, 42", A-PSCP, embed	lf	4,250		33.50
B-PSCP	lf	4,250	32.60	31.50
C-steel	lf	4,250		34.50
36", A-PSCP, embed	lf	12,800		28.90
B-PSCP	lf	12,800	28.00	26.90
C-steel	lf	12,800		29.90
36", AB-PSCP	lf	1,100	48.00	97.40
C-steel	lf	1,100		100.50
30", A-PSCP, embed	lf	13,500		22.65
B-PSCP	lf	13,500	22.25	20.65
C-steel	lf	13,500		23.65
20", CIP	lf	150	20.00	20.00
Vlvs, gate, jt & test, f&set, 30"	ea	1	3,235	3,500
24"	ea	7	1,980	2,300
20"	ea	9	1,560	1,700
12"	ea	5	300.00	300.00
Add work, connections	ls	job	13,000	2,300
Hydrants, air release, assemblies compl	ea	4	750.00	800.00
Outlets, air release, manual vlvd	ea	1	850.00	2,000
Hydrant, blowoff, assemblies compl	ea	6	835.00	700.00
Crossing, river	ls	job	87,000	70,000
Piles, tmbr, f & drive	lf	1,750	6.30	6.00
caps, tp A, 12"x14"	ea	17	92.00	640.00
tp B, 18"x18"	ea	6	145.00	700.00
Crossing, railroad, A	ls	job	21,500	29,000
B	ls	job	7,500	11,000
Drainage, during const	ls	job	15,000	5,000
Pavement, replace, tp A	sy	1,500	15.00	12.00
tp B	sy	450	5.70	7.50
tp C	sy	1,600	4.15	6.50
tp D	sy	500	1.50	3.00
Loaming & grassing	sy	15,000	0.75	0.75
Exc, misc earth & backfill above norm gr.	cy	1,000	1.50	1.00
below norm gr. due to obstruction	cy	1,000	2.00	4.00
due to unsuit mat.	cy	1,000	2.50	4.00
Backfill, sand	cy	1,000	3.75	1.50
back-run	cy	1,000	2.75	3.50
screened gravel	cy	1,000	4.00	3.50
Exc, rock, & disposal	cy	2,000	10.00	10.00
Piling, steel sheet, lip	lb	10,000	0.13	0.13
Lumber, lip	Mbm	200	1.00	200.00
Clean up	ls	job	9,540	3,200

Completion time: 365 calendar days
Liquidated damages: $100 per day, Sundays & holidays excl
ENR Constr. Cost Index (1913=100) 20-cities avg.—847.32

Low Excavation Prices Take Delaware Road Award

A. Burke Layton, Inc., Wilmington, Del., bid $0.56 a cu yd for 55,000 yards of excavation to take this Delaware Interstate Highway Division contract at $47,055. This contract price was 19% under the second low bid placed by Greggo & Ferrara, Inc., New Castle, Del., and 39% under the high of seven bidders. Excavation accounts for 65% of the contract's costs, and drew unit bids ranging from the low of $0.56 to a high of $1.00 a yard. Howard, Needles, Tammen & Bergendoff, New York City, are the engineers on this access road to Memorial Plaza, Delaware Memorial Bridge.

Union wage rates include: carpenters, $3.800/hr; building laborers, $2.250/hr.

The bidding included:

1C	A. Burke Layton, Inc., Wilmington, Del	$47,055
2	Greggo & Ferrara, Inc., New Castle, Del	57,847
7	The Empire Const. Co., Baltimore, Md.	77,310

Bids: 5-19-61 Items	Unit	Quantity	Unit 1 C	Prices 2
Excavation	cy	55,000	$0.56	$0.63
Borrow, select	cy	880	1.80	1.00
Macadam, penetration, 3" thick	sy	5,540	0.65	1.50
Bit conc surf course, cold laid, 1½" thick	sy	310	0.90	2.00
gutter, cold laid, 2½" thick	sy	800	1.30	2.50
RCP, culv, 12"	lf	230	4.50	3.00
15"	lf	645	5.00	3.50
PCC, curb, sidewalk	lf	450	0.50	2.50
& gutter, tp 2	lf	85	2.50	2.10
Catch basin, tp A	ea	2	160.00	140.00
tp B	ea	2	135.00	140.00
tp C	ea	3	130.00	140.00
Topsoil	sy	2,400	0.50	0.35
Topsoiling	sy	2,400	0.30	0.35
Seeding	ac	2.2	265.00	250.00
Mulching	sy	10,700	0.10	0.08
Sod gutter	sy	400	1.25	0.80

ENR Constr. Cost Index (1913=100) 20-cities avg.—847.32

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES.

- Cement Aggregate, Ready Mixed Concrete Asphalt: Last, July 6; Next, Aug. 10.
- Wood Products, Glass, Explosives, Chemical: Last, July 20; Next, Aug. 24.
- Iron & Steel Products, Pipe: Last, July 13, Next, Aug. 17.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, July 27, Next, Aug. 31.

HOURLY WAGE RATES—Base rate + fringe benefits

Classification	Atlanta $ + ¢	Baltimore $ + ¢	Birmingham $ + ¢	Boston $ + ¢	Chicago $ + ¢	Cincinnati $ + ¢	Cleveland $ + ¢	Dallas $ + ¢	Denver $ + ¢	Detroit $ + ¢	Kansas City $ + ¢	Los Angeles $ + ¢	Minneapolis $ + ¢	New Orleans $ + ¢	New York $ + ¢	Philadelphia $ + ¢	Pittsburgh $ + ¢	St. Louis $ + ¢	San Francisco $ + ¢	Seattle $ + ¢	Montreal $ + ¢	Toronto $ + ¢
COMMON LABOR																						
Building	2.00	2.30+7½	1.95	2.75+10	3.225+7½	2.90	3.52	1.85	2.47	3.00+34	2.705	3.26+10	3.00	1.925	3.65+292	2.70+15	2.725+20	3.025+10	3.225+10	3.00+25	1.75+4	2.00+8
Heavy Const.	2.00	2.30+7½	2.05	2.75+10	3.225+7½	3.025	3.435	1.85	2.42	3.00+34	2.755	3.26+10	2.98	2.00	3.65+292	2.65+10	2.55+20	3.025+10	3.225+10	3.00+25	1.75+4	2.00+8
SKILLED BUILDING TRADES																						
Bricklayers	4.00	4.10+15	4.05	4.20+30	4.40+10	4.125+14	4.085+25	4.15	4.15	4.09+33	4.20	4.35+25	4.175	3.775+7½	5.20+62	4.40+17	4.50+20	4.25+33	4.40+42½	4.15+30	2.55+6	3.20+13
Carpenters	3.35	3.60+7½	3.23	3.85+10	4.08+20	3.95	4.11+15	3.50	3.65	3.75+47	3.75	4.00+20	3.83	3.35+075	4.75+38	4.00+20	4.125+20	3.975+104	3.95+36	3.53+20	2.35+5	2.95+12
Struct. Iron Workers	3.70+7½	4.10+20	3.77+13	4.26+20	4.55+16	4.025+105	4.16+10	3.675+8	3.81+10	4.10+27½	3.90	4.275+25½	3.92+15	3.65+10	5.05+706	4.45+23	4.30+20	3.975+104	4.275+25	3.92+10	2.55+6	3.05+12
Plasterers	3.50+3	3.85+10	3.37	4.00+45	4.17+27	3.925+1	4.16+10	3.875+10	3.975+15	3.87+41	4.00	4.25+55	3.77+33	3.34+5	4.95+67	4.15+20A	4.225+20	4.10+7½	4.29+63	3.87+32	2.65+6	3.20+21
Electrical Workers	4.00+5	3.85+10	3.925	4.10+25	4.50	4.09+51	4.29	3.625+7½	4.20	4.11+52	3.90+43	4.65+46	3.85+44	4.00+7½	4.40+26	4.525+18	4.60+34½	4.11+51	4.38+37	4.025+26	2.55+5	3.60+19
Steamfitters	4.00+25	3.96+18	3.80+12	4.15+29	4.25+25	4.10+215	4.06+20	3.70+8½	4.05+12	3.90+51	4.00+295	4.58+68	3.62+37	3.90+7½	4.80+772	4.35+32	4.20+20	4.425+25½	4.57+76	4.14+29	2.62+6	3.51+20
EQUIPMENT OPERATORS																						
Hoisting Engineers	3.88	4.10+20	3.30	4.15+35	4.05+05	3.90A	4.26	3.65	3.25	3.74+39½	3.72	4.01+25	3.75	3.475+7½	4.90+39	4.345/4.205 +275A	3.73+20	4.175	4.00+35	3.94+20	2.35+5C	3.25+13
Tractor Operators (B)																						
34–49 hp	3.15	3.70+20	3.30	3.575+35	3.80+5	3.675+10	4.01	2.625	2.50	3.74+39½	3.025	4.31+25	3.36	3.475+7½	4.375+35	3.78 +275	3.72+20	4.175	4.23+35	3.91+30	1.95+4C	2.50+10
70–100 hp	3.15	3.70+20	3.30	3.575+35	3.95+5	3.675+10	4.01	2.625	3.10	3.74+39½	3.475	4.31+25	3.60	3.475+7½	4.375+35	3.925+275	3.72+20	4.175	4.23+35	3.91+30	2.18+5	2.60+10
Over 100 hp	3.15	3.70+20	3.30	3.575+35	3.85+5	3.675+10	4.01	2.625	3.10	3.74+39½	3.475	4.31+25	.....	3.475+7½	4.375+35	3.925+275	3.72+20	4.175	4.23+35	3.91+30	2.18+5	2.60+10
Tractor Scraper, 15–16 cy	3.15	3.70+20	3.30	3.575+35	3.85+25	3.675+10	4.01	2.625	3.10	3.74+39½	3.475	4.41+25	3.60	3.475+7½	4.50+36	4.05+10	3.72+20C	4.175	4.36+35	3.91+30	2.18+5C	2.60+10
Power cranes & shovels																						
½ cy	3.675	4.10+20	3.30	4.00+35	4.40+5	3.675+10	4.26	3.375	3.25	3.74+39½	3.72	4.41+25	3.82	3.475+7½	5.25+420	4.495+275	3.92+20	4.175	4.67+35	4.28+30	2.45+5	3.10+12
¾ cy	3.675	4.10+20	3.30	4.00+35	4.40+5	3.90+10	4.26	3.375	3.25	3.74+39½	3.72	4.41+25	4.08	3.475+7½	5.25+420	4.495+275	3.92+20	4.175	4.67+35	4.28+30	2.45+5C	3.25+13
Motor grader operator	3.15	3.25+20	3.30	4.00+35	3.85+5	3.90+10	4.01	2.625	3.10	3.74+39½	3.72	4.41+25	3.36	3.475+7½	4.50	4.025+275	3.92+20	4.175	4.44+35	4.00+30	2.18+5C	2.90+11
Air Comp. operator	2.825	3.30+20	2.89	3.55+35	3.70+5	3.90+10	3.885	2.10	3.10	3.74+39½	3.475	3.53+25	3.25	2.75+7½	4.50+35	3.66+275	3.43+20	3.625	3.67+35	3.64+30	2.05+5	2.60+10
Air tool operator	2.22	2.325+7½C	2.15	2.80+10	4.00+5	3.90+10	3.885	2.10	2.75	3.13+34	2.80	3.47+10	3.30	2.075	4.10+492	2.55+10	2.60+20	3.625	3.655+10	3.35+10	2.05+5	2.60+10
TRUCK DRIVERS																						
1½ Ton	2.10	2.27+075	2.00	2.85+23	2.68+21	2.70+11	3.07+15	2.625	2.70	3.11+18	2.68	3.575+10	2.98	3.475+7½	3.275+28	2.64+18	2.59+20C	3.03+15	3.38+21	3.50+30	1.75+4	2.05+15
Under 4 cy	2.20	2.27+075	2.20	2.85+23	2.68+21	2.75+11	3.07+15	2.625	2.85	3.11+18	2.68	3.575+10	2.98	3.475+7½	3.275+28	2.64+18	2.635+30	3.23+15	3.253+21	3.50+30	1.75+4	2.05+15
Over 4 cy	2.50	2.27+075	2.45	2.85+23	2.68+21	2.80+11	3.07+15	2.625	3.05	3.11+18	2.755	3.765+10	3.13	3.475+7½	3.275+28	2.64+18	2.735+20	3.33+15	3.413+21	3.70+30	1.75+4	2.05+15

ENR Skilled Labor Average (Bricklayers, Carpenters, Iron Workers): $4.178, ENR Common Labor Average $2.826 Description of fringe benefits last appeared Sept. 22, 1960. •A 2 drum. •B Including Bulldozers •C correction

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles Q	Minneapolis F	New Orleans	New York	Philadelphia H	Pittsburgh	St. Louis HO	San Francisco	Seattle	Montreal	Toronto
GYPSUM BOARD & LATH																						
Plaster board, ½"	$62.50F	$54.00	$63.00H	$61.00mH	$67.50	$53.50wH	$63.00CF	$57.50	$64.50H	$66.00K	$72.00H	$67.00F	$68.00	$57.00H	$70.00H	$54.00	$74.00K	$56.50/67.50	$60.00	$71.75K	$58.00M	$49.50
" " ⅝"	52.50F	47.50	52.00H	51.00mH	54.50	43.85wH	56.50CF	47.50	54.00H	56.00K	62.00H	60.50F	58.00	48.00H	55.00H	45.00	65.00K	51–56HO	49.00F	59.50K	50.00M	37.25
Board lath, ⅜"	40.00F	35.75	47.77H	36.00mH	45.00	33.05wH	39.00CF	43.50	42.00H	42.45K	45.00H	0.33xF	0.41xL	40.00H	42.50H	36.50	40.00K	40.00HO	0.36xF	51.50K	39/42.00M	41.00L
SHEATHING																						
Gypsum T & G, ½"	62.50F	55.70	75.00H	56.00mH	62.50	51.16wH	58.75CF	57.50	66.75H	66.00K	.....	64.50F	67.00	57.00H	60.00H	52.50	63.00K	67.00HO	61.00F	70.00K	54.00M	70.00
Fiber board, ½", sq. e	72.00F	65.00	67.50H	65.00H	87.00	77.00wH	72.50CF	68.75	62.50H	48.50DK	75.00H	75.00F	100.00	67.00H	78.00	62.00	60.00K	65–75HO	70.00F	68.50K	63.00M	68.00T
" " 25/32", T & G	.....	108.50	140.50H	120.00H	123.00	125.00wH	115.00CF	118.00	107.50H	85.65DK	122.00H	125.00F	135.00	140.00H	124.00	110.00	100.00K	115/120	111.00F	68.50K	.....	.....
INSULATION																						
Fiber board, sq. e., ½"	75.00F	69.00	83.50H	79.00hnH	87.00	72.50wH	80.00CF	68.75	75.00	62.50DK	80.00H	80.00F	81.00	80.00H	78.00	65.00	60.00K	75/80	69.00F	71.00K	73.00M	75.50T
Min. wool, loose	1.59z	1.40F	1.40	1.70bH	1.85	1.45wH	1.35	2.00	1.55b	1.30b	1.40H	76.00BeF	1.75y	2.25L	1.55b	1.20	1.25sK	125/135	1.75F	1.25tK	1.35M	1.85
" " 3" batts	67.80F	67.50	70.00	75.00H	80.00	60.00wH	70H	70.00	65.00ub	52.00	75.00H	83.00F	70.00	70.00*	68.50k	50.00	55.00K	60/70	66.50F	58.00K	60.00M	57.50
Glass fiber, loose	1.45	1.60F	2.00	.....	.....	1.45wH	.....	1.75	2.00b	1.85b	1.80H	1.35s	1.75	.....	.....	1.40	1.25sk	2.02P	1.75F	1.90*pK	1.35M	.....
" " 3" batts	50.00F	47.00F	65.00	75.00H	63/65	60.00wH	61.00	70.67	65.00a	80.00	75.00H	64.00	70.00	.....	68.50	50.00	55.00K	68.50	66.50F	51.00*lKb	60.00M	57.50
Aluminum foil, 1 side	3.75qi	4.00F	3.77gG	5.30xHS	5.25	3.02jwJ	14.00ioJ	5.00gAG	5.25	.....	3.60d	4.40g	3.50	6.50	4.38iH	2.90	4.25igK	4.39ig	5.10	3.50K	9.00qM	15.50o
" " 2 layers	.....	33.50F	.....	53.50qH		66.00wJ	55.00J	45.00	48.65	.....	60.00	7.45V	.....	.....	40.00eH	83.50	38.50K	.....	60.00F	45.00EK	56.00M	46.00

•* F.o.b. warehouse. •a Semi thick. •b 30# bag. •c 3 layers of foil: $54.50. •d 40# kraft paper, 5 Msf, 100/500 rolls. •e 20# sq ft bag, 4" thick. •f Full trailer loads. •g 80# kraft paper backing 400 rolls or over. •h LCL. •i 40#. •j 80#. •k 2-in. •l 2". •m 8 to 10 ton quantities. •n Distributor's siding. •o Per Msf roll. •p 32# bag. •q 500 sf. •s 35# bag. •t 26# bag. •u Flame proof $75. •v 5000 sf quantity. •w F.o.b. city. •x Sq. yd. •y 30# bag. •z Spun rock wool. •A 650 sf. •B ton •C F.o.b. plant, freight allowed. •D CL. •E 10 Msf. •F Less 2% disc, 10th. •G ½ of 1%, 10 days. •H 2% disc, 10 days. •J 1% disc, 10 days. •K Less 2% for cash. •L 5% disc, 10th mo. •M fed. tax incl. •N 1% disc, 10 days. •O add 2% sales tax. •P 50 lb. bags. •Q add 4% sales tax •R revised. •S 45 lb. •T less 2%, 30 days. •U lots of 2606 sq. ft. •V 250 sf roll.

MEXICO CITY WAGES AND PRICES, JULY, 1961

WAGES, av per week, 8 hr day (pesos) 6 days work-extra day's pay

Common labor, building (peons)		101.50
	heavy const (peons)	136.50
Skilled labor;	carpenters 1 cl	210.00
	bricklayers 1 cl	245.00
	struct. ironworkers	315.00

MATERIAL PRICES, F.o.b. City (pesos)

Struct. steel shapes, fob Monterrey		
I-beams, 3 x 3 x 4"	per metric ton	1942.10
Reinf. steel, corrugated rods, per ton		
⅜"–½" x 11 meters consolidada		1875-1950
¾"–1" x 11 meters		1750.00
Gravel, truckload, per cu meter		
Blue gravel		30.00
Cement, std. port. (Tolteca)	per metric ton	260.00
Lumber, 2" x 4" 1st class pine 20 ft.	per M sq. ft.	3000.00
2" x 4" 2nd class pine	per M sq. ft.	2300.00

Payscraper® rigs speed road job in power-robbing Long Island sand!

—for Hendrickson Brothers, Inc., Valley Stream, N.Y.

Hendrickson Brothers, Inc., are prime contractors for 7.41 miles of Sunrise Highway extension, in Suffolk County, Long Island, New York. Much of the 2,100,000 cu. yd. to be moved is dead, "scraper fighting" sand. Hendrickson's count on six International 295 Payscraper rigs to help handle this contract profitably!

"The '295's' are doing a very good job in rough-to-handle Long Island sand," states Project Supt. Jerry Sposato. "Ample power, plus good maneuverability and flotation enable loaded '295's' to pull from the sand cut fast without pusher assistance."

Payscraper provides the advantage of up or down, on-the-go torque converter power-shifting—with load-speeding, automatic direct drive lock-ups in second, third and fourth gears. The 4-speed, planetary-type torque converter transmission automatically adjusts torque and speed to load.

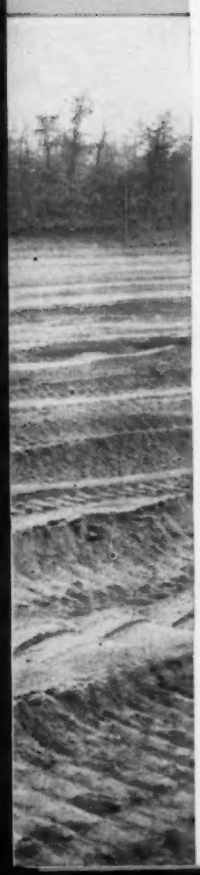
Torque-cushioning planetary drive axles let the operator "gun" the DT-817 turbocharged Diesel, and develop maximum rim-pull, fast.

And International design takes the hard work out of scraper operation. "Two-finger" power-steering is by exclusive rack-and-pinion tandem pump system. 1,920 sq. in. of braking surface is controlled by quick-release valve for fast brake-and-go action. Exclusive International planetary cable bowl control provides operator "feel" and fast heat dissipation when pump-loading sand.

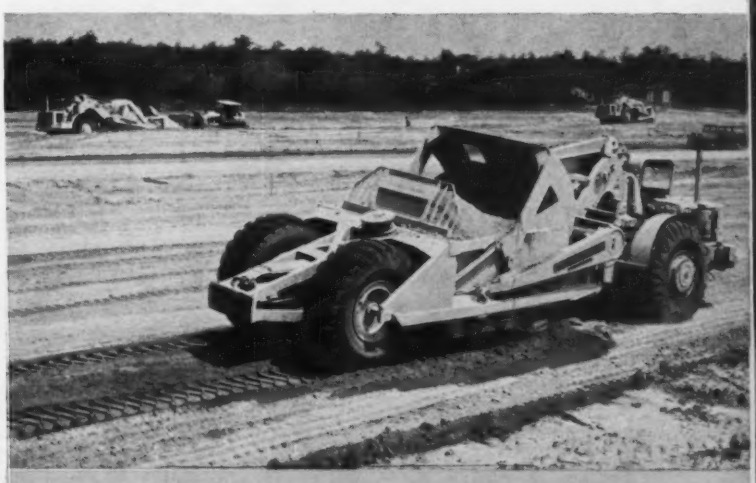
See for yourself how International 295 Payscraper "drive" takes the time-waste out of tough conditions—and lets your operators give you full capacity—full time. Let your International Construction Equipment Distributor demonstrate!

International®
Construction
Equipment

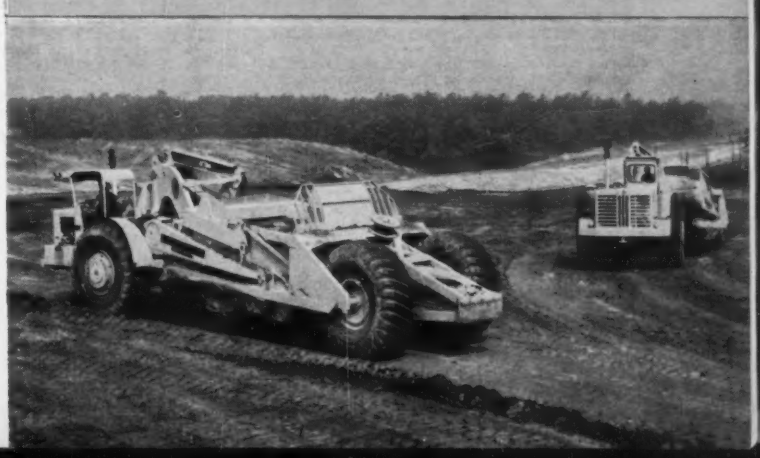
International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE



Operating in deep, power-hogging Long Island sand, this loaded 295 Payscraper is ready to power-shift up and haul out to the fill. Power-transfer differential helps beat the traction problem in loose sand.



Positive, Payscraper ejection is powered by International "live" PTO-driven Cable Control Unit. You get dozer-like force for positive, steady ejection of hard-to-handle sand or any other scraper-moved material!



Complete, coordinated power control of shifting, steering, braking, and bowl actions builds operator confidence—help you get full capacity and profit from Payscraper.

Bid Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Leominster** — BA 8/22 — City, High School Bldg. Comn., City Hall, HIGH SCHOOL, Granite St. $3,479,000. Plans deposit $500. L. W. Briggs & Assoc., Inc., 90 Park Ave., Worcester, archts. CD 5/8/61.

▲ **Conn., Stamford** — BA 8/24 — Town, Purch. Agt., Town Hall, Turn-Of-River JUNIOR HIGH SCHOOL, Vine Rd. $3,100,000. Extended date. Plans deposit $120,000. Sherwood, Mills & Smith, 65 Broad St., Stamford, archts. CD 6/20/61.

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, ROAD,

M. De Matteo Constr. Co., 200 Hancock St., Quincy, Mass., CA **$4,037,874**, est. $4,357,795, constr. Section Interstate Rte. No. 495, Proj. No. FAP 1-495-6 (18)69, Chelmsford, BA 4/25/61. CD 4/27/61, under LB.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **N. Y., Lewiston**—BA 11/15—Sisters of St. Francis, Williamsville, 200-bed HOSPITAL. $5,000,000. Sargent, Webster, Grenshaw & Folley, 212 Erie Blvd. East, Syracuse, Zone 3, archts. CD 9/23/60.

▲ **N. Y., Brooklyn**—BA 8/24—New York City Housing Auth., 299 Broadway, New York, Zone 7, (1) foundations and general construction (2) heating and ventilating (3) electrical work (4) plumbing work Tompkins HOUSES (Proj. NY-5-47) area bounded by Park Ave., Throop Ave., Myrtle Ave. and Tompkins Ave. Plans deposit $75. CD 3/2/59.

BUILDINGS—SLC

▲ **N. Y., New York**—American Red Cross, New York Chapter, 315 Lexington Ave., soon lets contract 5 story HEADQUARTERS, Amsterdam Ave., 66th St., Lincoln Square Development. $5,000,000. Skidmore, Owing & Merrill, 425 Park Ave., archts. Slocum & Fuller, 207 East 32nd St., engrs. CD 6/3/60.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Bids opened 7/27, ROADS.

N. Y.—**Horn Const. Co. Inc.**, 2174 Hewlett Ave., Merrick, LI, N. Y. LB **$2,488,091.50**, est. $2,802,000, (4 bidders), c. conc. pavt. 0.65 mi., b. conc. pavt. 0.93 mi. comp. struct. 5 spans 310 ft. total, comp. struct. 10 sps. 553 ft. total, ped. overpass steel and concrete struct. 7 spans 580 ft. total Harlem River Dr. (East 132 St. to West 143 St.) FAHRD 61-1, Contr. 132 B. Proj. U-1133(8), New York Co.;

N. Y.—**Lizza & Sons, Inc.**, 152 South St., Oyster Bay, N. Y., LB **$5,136,975.10**, est. $6,811,000, (6 bidders), c. conc. pavt. 3.45 mi., misc. work 0.35 mi. acc. 3.34 mi. 8 H.G.S. comp. I-beam, 1 sp. 83.6 ft., 1 sp. 84.2 ft., 4 sps. 286.4 ft. total, 4 sps. 279.1 ft. total, 4 sps. 286.7 ft. total, 1 sp. 72.1 ft., 1 sp. 72.1 ft.; 4 sps. 231.5 ft. total Long Island Expressway, Contr. 12 (Commack Rd. to Islip Ave.) FALIE 61-3, Proj. U-862(32), Suffolk Co. CD 6/22/61.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Bids opened 7/27, BRIDGES,

N. Y.—**The Whiting Turner Contg. Co.**, 6229 N. Charles St., Baltimore, Md., LB **$334,721.25**, est. $349,000, (4 bidders), repairing 112 St. bridge and approaches between Troy and Cohoes, TCB 61-1, Albany and Rensselaer Counties;

N. Y.—**Bethlehem Steel Co.**, Bethlehem, Pa., LB **$8,397,963.50**, est. $10,725,000, (3 bidders), superstructure 14 spans 6,870 ft. total 1.3 mi. Newburgh-Beacon Bridge over Hudson River, Contr. 3, NBB 61-2, Dutchess and Orange Counties. CD 6/22/61.

▲**Perini Corp.**, 73 Montwait Ave., Framingham, Mass., CA **$5,547,500**, WATER TREATMENT PLANT, ROCHESTER, N. Y. Monroe County Water Auth., 331 East Ave., Rochester, N. Y. BA 7/12/61. CA 7/19/61. CD 7/17/61.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, ROAD,

Franklin Contg. Co., U.S. Rte. 46, Little Falls, N.J., CA **$4,678,771**, interchange connecting Interstate Rte. 80 with N.J. Rte. 17, Proj. I-80-5(16)64, Bergen Co. BA 6/29/61, CA 7/20/61. CD 7/5/61, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, Bids opened July 20, ROADS,

Pa.—**S. J. Groves & Sons Co.**, P. O. Box 355, Camp Hill, Pa., LB **$3,997,759**, (9 bidders), 16,874 ft. c. conc. pavement 26 ft. wide and 8 bridges, L.R. 1000(f-3C) sect. of Delaware Expressway (Interstate), Bucks Co.;

Pa.—**Adam Eidemiller, Inc.**, R. D. 4, Greensburg, Pa., LB **$3,894,784**, (7 bidders) 17,171 ft. divided hy. consisting of reinforced pavement, 24 ft. wide and 7 bridges, L.R. U. S. 19, Butler Co.;

Pa.—**Glasgow, Inc.**, Glenside, Pa., LB **$1,748,922** (4 bidders), 35,300 ft. existing pavement width conc. base variable in width, T.R. 1, Delaware Co. CD 6/26/61.

BUILDINGS—LB & CA

▲ **Green Manor Constr. Co.**, 380 West Middle Turnpike, Manchester, Conn., LB **$4,754,000**, general contract 25 units HOUSING, SYRACUSE, N. Y. Syracuse Housing Auth., c/o Wm. L. McGarry, ex. secy., 1001 Almond St., Syracuse, N. Y., BA 7/20/61, CD 6/19/61;

Burns Bros. Plumbers, Inc., 631 West Belden Ave., Syracuse, N. Y., LB **$784,500**, plumbing contract, HOUSING, (SYRACUSE, N. Y.);

Ed. Joy Co., 905 Canal St., Syracuse, N. Y., LB **$673,000**, heating and ventilating contract, HOUSING, (Syracuse, N. Y.).

▲ **USCO Contractors, Inc.**, Sunshine Village, Wayside Rd., Neptune, N. J., Owner Builds, **$5,000,000**, 400 HOUSES, off Wayside Rd. and Rte. 66, NEPTUNE, N. J.

▲ **Contractors, Inc.**, 711 S. Central Ave., Baltimore, Md., LB **$6,744,000**, (6 bidders), CIVIC CENTER, BALTIMORE, MD. City, City Hall, Baltimore, Md. BA 7/26/61. CD 7/10/61.

SOUTH

BUILDINGS—LB & CA

▲ **Cromwell Const. Co.**, 7165 Galows Rd., Annandale, Va., Owner Builds, Total est. **$10,000,000** (First Section $1,500,000. 75 HOMES), 500 HOMES, ANNANDALE, VA. Alfred Kastner & Assocs., 1920 K St. N.W., Wash., D. C., archts.

▲ **Brickell Mansions, Inc.**, c/o Steward-Skinner Assocs., archts., DuPont Plaza Center, Miami, Fla. Owner Builds, **$5,500,000**, 363 units 21 story RIC Brickell Town House APARTMENT and pool, Brickell Ave. near SW 25th Rd., MIAMI, FLA. Sasnett Eng., Inc., DuPont Plaza Center, Miami, Fla., mech. engr. CD 1/5/61.

▲ **Triangle Constr. Co.**, P.O. Box 997, Tallahassee, Fla., CA Est. **$4,000,000**, SYNTHETIC DETERGENT MFG. PLANT AUGUSTA, GA. Proctor & Gamble Co., P & G Bldg., 6th and Sycamore, Cincinnati, O. A. M. Kinney, Inc., 2912 Vernon Place, Cincinnati, O.. engr. CD 6/23/61.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **O., Cincinnati**—BA 8/23—City, City Hall, Eden Park, COVERED WATER RESERVOIR, PUMPING STATION. $4,000,000. Plans deposit $50. CD 3/10/61.

BUILDINGS—SLC

▲ **Ill., Streator**—St. Marys Hospital, Streator, soon lets contract, 5 story, 200 bed HOSPITAL, $4,500,000. E. H. Berners, c/o Foeller, Schober, Berners, Safford & Jahn, archts., 310 Pine St., Green Bay, Wis. CD 1/19/60.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15, ROADS,

O.—**L. R. Skelton**, 3099 Sullivant Ave., Columbus, O., CA **$583,896**, Type T 35 and structures 4.386 mi. SR 247, Sections (8.95 (14.20), S 1357(1) Proj. 335, Adams Co.;

O.—**The Horvitz Co.**, 4375 E. 146th St., Cleveland, O., CA **$7,987,860**, Type T 71 and structures 7.335 mi. SR 1, Section 5.28, I 271-6(6)255, Cities of Lyndhurst and Mayfield Heights, Villages of Pepper Pike, and Mayfield, Proj. 341, Cuyahoga Co.;

O.—**Peirce Constr. Co.**, 3005 Bellevue Rd., Toledo, O., CA **$936,752**, Type T 71 and structure 1.981 mi. USR 6 Section 14.97, U 1042(8) City of Huron, Proj. 342, Erie Co.;

O.—**Ohio Engineering Co.**, 1945 E. 28th St., Lorain, O., CA **$735,000**, Type T 35 on B 19 and structure 9.004 mi. USR 68, Section 0.00, F 590(7) City of Kenton and Taylor Creek and Buck Twps., Proj. 343, Hardin Co.;

O.—**Pioneer Paving & Constr. Co., Inc. and T-35 Asphalt Paving Co.**, 5444 Perkins Rd., Bedford Heights, O., CA **$1,555,807**, Type T 71 and structure 2.409 mi. SR 44, Section 7.22, S 1183(3) Village of Grand River and Mentor and Painesville Twps., Proj. 345, Lake Co.;

O.—**V. N. Holderman & Sons Co.**, 6155 Huntley Rd., Columbus, O., CA **$4,234,848**, Type T 71 and structures 7.099 mi. SR 16, Sections (14.30-18.51) SR 161, Section 11.13, F-FU-U 639(5) Proj. 346, Licking Co.;

O.—**Odell Constr. Co. and W. G. Lockhart Constr. Co.**, 805 Prouty Rd., Painesville, O., CA **$4,009,255**, Type T 71 and structures, 6.428 mi. USR 21 Section 15.46, I-77-4(20)141, Bath and Richfield Twps., Proj. 350, Summit Co.;

O.—**J. A. Jones Constr. Co. of Charlotte, N. C.**, P.O. Box 108, Berlin Heights, O., CA **$2,799,653**, Type T 71 and structures 5.347 mi. SR 57, Section 11.74, F-U-602-(17) S 121(3) City of Elyria, Elyria, Carlisle and Eaton Twps., Proj. 347, Lorain Co. Grand total $22,843,071. BA 6/27/61. CD 7/11/61.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield, ROADS,

Ill.—**Robert R. Anderson Co.**, 4550 W. Patterson Ave., Chicago, Ill., CA **$4,191,637**, paving, ramps, frontage roads, South Rte. between 51st and 57th Sts., Chicago, Cook Co.;

Ill.—**Thomas M. Madden Co.**, 4610 Van Buren St., Chicago, Ill., CA **$4,229,763**, paving ramps, frontage roads, South Rte. between 57th and 63rd Sts., Chicago, Cook Co. BA 7/11/61, CA 7/25/61. CD 7/14/61, under LB.

▲ **Gust K. Newberg Constr. Co.**, 2040 N. Ashland St., Chicago, Ill., LB **$4,983,192**, PARKING LOT, RB 44, O'Hare Airport, Proj. 80.85-61-141, Park Ridge, CHICAGO, ILL. City, City Hall, Chicago, Ill. BA 7/20/61. CD 7/12/61.

BUILDINGS—LB & CA

▲ **Schroeder Homes, Inc.**, 1825 W. Alexis Rd., Toledo, O., Owner Builds, **$5,000,000**, 300 HOMES, along north side Ottawa River, off Shoreland Blvd. between Summit St. and Suder Ave., TOLEDO, O.

▲ **Hoevel Development Corp.**, 2435 Shady Oak Dr., Fort Wayne, Ind., Owner Builds **$4,000,000**, 400 HOMES, Colonial Heritage Place, FORT WAYNE, IND.

▲ **Lebrato Bros.**, 2818 Inwood St., Fort Wayne, Ind. CA Est. **$5,000,000**, 400 HOMES, Casa Verde Addn., southeast edge of FORT WAYNE, IND. George A. Poag & Assocs., Inc., 528 W. Berry St., Fort Wayne, Ind.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **South Dakota**—BA On Or About 10/10—U. S. Eng., 6012 U. S. Post Office & Court House, Omaha 2, Neb., SPLLWAY STRUCTURE, Big Bend Reservoir, ENG-25-066-62-12. Approx. $6,000,000.

BUILDINGS—BA

▲† **Minn., St. Paul**—BA 9/6—General Services Admin., 2306 East Bannister Rd., Kansas City 10, Mo., UNITED STATES POST OFFICE and CUSTOMS HOUSE EXTENSION REMODELING, Proj. 21900. **CD 9/8/60.**

HEAVY CONSTRUCTION—LB & CA

▲† **Peter Kiewit Sons Co.**, 3555 Farnam, Omaha, Neb., LB **$56,220,274**, est. $66,548,147, (4 bidders), MINUTEMAN MISSILE BASE, Ellsworth Air Force Base, ENG-04-548-61-43, RAPID CITY, S. D., U. S. Eng., Ballistic Missile Construction Office, 9610 Bellanca Ave., Los Angeles, Calif. BA 7/25/61. CD 6/14/61.

▲ **McKenzie, Hague, Gilles Co.**, 1116 Flour Exchange Bldg., Minneapolis, Minn., CA **$4,497,710**, GRAIN ELEVATOR, BEAUMONT, TEX. Port of Beaumont, Navigation Dist., 1255 Main St., Beaumont, Tex. BA 7/11/61. CD 7/19/61 under LB.

Trotti & Thompson, Inc., Box 70, Beaumont, Tex., CA **$1,060,750**, GENERAL CARGO WHARF, OPEN STORAGE WHARF, (Beaumont, Tex.)

BUILDINGS—LB & CA

▲ **Winn-Senter Constr. Co.**, 901 West 43rd, Kansas City, Mo., CA Est. **$7,000,000**, 19 story OFFICE, KANSAS CITY, MO. Business Men's Assurance Co., 215 West Pershing Rd., Kansas City, Mo. BA 3/13/61. CD 3/14/61.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

▲ **Morrison-Knudsen, Inc.**, Buckley Field, Denver, Colo., CA Approx. **$5,500,000**, 39 mi. RAILROAD to new potash plant, Moab, UTAH. Denver and Rio Grande Western Railroad, 1531 Stout St., Denver, Colo. BA 7/24/61, CA 7/25/61. CD 7/12/61.

▲ **Sacramento Municipal Utility Dist.**, 1708 59th St., Sacramento, Calif., rejected bids July 18, Loon Lake EARTHFILL DAM and DIKE, incl. excavation 1 million cu. yd., Upper American River Project, El Dorado Co., SACRAMENTO, CALIF. LB **$7,425,499**. Will readvertise. CD 7/20/61, under LB.

BUILDINGS—LB & CA

▲† **C. H. Leavell**, 1900 Wyoming St., El Paso, Tex. and **Morrison-Knudsen Co., Inc.**, 319 Broadway, Boise, Idaho, CA **$8,885,000**, (8 bidders), Stage 3, 100 buildings, utilities, MINUTEMAN INDUSTRIAL FACILITIES, Air Force Plant No. 81, Baccus Plant for Air Force, MAGNA, UTAH. Hercules Powder Co., Magna, Utah. Leo A. Daly & Assocs., Securities Bldg., Seattle, Wash., archts.-engrs.

▲ **Service Engineering Co., Inc.**, 2910 E 15th St., Tulsa, Okla., HELIUM EXTRACTION PLANT, at Pinta Dome Field, NAVAJO, ARIZ. Kerr-McGee Oil Industries, Inc., Kerr-McGee Bldg., Oklahoma City, Okla. Air Products Inc., Trexlertown, Allentown, Pa., engr.-archt.;

Northwest Constr. Co. Inc., Farmington, N. M., 10 mi. 4- to 8-mile gathering system for PLANT, (Navajo, Ariz.)

▲† **J. W. Bateson Constr. Co., Inc.**, 10130 Monroe Drive, Dallas, Tex, and P.O. Box 13307, Walnut Hill Station, Dallas 20, Tex., CA **$7,812,882**, 500 unit CAPEHART HOUSING, UNIT 4, ENG-61-280, FORT ORD, CALIF. U. S. Eng. 180 New Montgomery St., San Francisco, Calif. BA 5/17/61. CD 5/23/61, under LB.

▲ **Stolte, Inc.**, 8451 San Leandro, Oakland, Calif., CA **$4,389,000**, (8 bidders), 5 story bsmnt., 186,000 sq. ft. COUNTY ADMINISTRATION BLDG., concrete frame, rein.-con. columns, conc. precast panels, OAKLAND, CALIF. Alameda Co., Court House, Oakland, Calif. BA 7/18/61, CA 7/18/61. CD 6/21/61.

(Continued on page 54)

PILE ON THE FILL — *it's corrugated galvanized steel culvert*

This rugged, heavy fill—43 feet of it—poses no problem for the 42-in. culvert made from 8-gage Beth-Cu-Loy galvanized corrugated steel sheets. That's because a culvert made of Beth-Cu-Loy is strong yet flexible enough to deflect with the fill, thus tending to equalize the load peripherally.

Flexibility also permits corrugated galvanized steel pipe to take the impact and vibration of heavy traffic. Corrugated steel withstands sharp weather changes and settling fills. It simplifies grading and alignment, and is easy to install without need for heavy equipment.

Beth-Cu-Loy sheets conform to the rigid specs of the AASHO. Rolled from open-hearth steel, these sheets contain copper for extra corrosion resistance. They are galvanized in Bethlehem's modern facilities with a 2-oz triple-spot test coating of Prime Western zinc. Your fabricator will be glad to give you complete details.

Galvanized Steel

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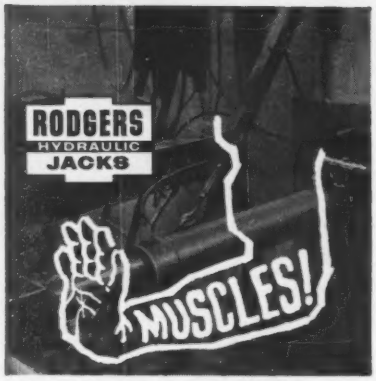
. . . Economy
. . . Versatility

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



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- STAFF AVAILABLE FOR SPECIALIZED PROBLEMS

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242 RANDOLPH ST., BROOKLYN, N. Y. HY7-5445

(Continued from page 52)

▲ **Robert E. McKee, and Nordic Constr. Ltd.,** 685 Ahua St., Honolulu, Hawaii, CA **$5,466,400,** Proj. EW-HRD-1, high rise DORMITORY, EW-LRD-1, low rise DORMITORY, EW-TQ TRANSIENT QUARTERS, EW-AFS ADMINISTRATIVE FOOD SERVICE, HONOLULU, HAWAII. University of Hawaii, Bd. Regents Bachmann Hall, University and Wilder Aves., Honolulu, Hawaii. BA 7/13/61. CD 6/26/61.

CANADA

BUILDINGS—LB & CA

▲ **T. C. Gorman Ltd.,** 441 Rainnie Dr., Halifax, N. S., CA, Total est. **$18,000,000,** first phase, ASBESTOS ORE DEVELOPMENT, wharf, service road, service bldg., garage at mill site, stripping, grading mill site, BAIE VERTE, NEWFOUNDLAND, Advocate Mines Ltd., 330 Bay St., Toronto, Ont., Patino of Canada Ltd., 55 Yonge St., Toronto, Ont., Canadian Johns Manville Co., Ltd., 310 Victoria St., Montreal, Que., Amet Corp., Inc., and Fianciere, Belge de L'Asbestos-Ciment, S.A. BA 7/3/61. CD 6/2/61.

▲ **Shenkman Properties Ltd.,** 141 Cooper St., Ottawa, Ont., Owner Builds, **$5,000,000,** INDUSTRIAL PARK, Ogilvie Rd., OTTAWA, ONT.

▲ **Dominion Structural Steel Ltd.,** Star Top Rd., Ottawa, Ont., CA Total est. **$7,000,000,** Phase 3, STEEL SUPERSTRUCTURE for CHOCLATE PLANT, Lorne St. E., SMITH FALLS, ONT. The Hershey Choclate Corp., 19 E. Choclate Ave., Hershey, Pa., U.S.A. CD 2/6/61.

▲ **Consolidated Bldg. Corp. Ltd.,** 99 Avenue Rd., Toronto, Ont., Owner Builds, **$15,000,000,** 2,500 unit HOUSING DEVELOPMENT, CHAMBLY, QUE.

▲ **Ferco Constr., Inc.,** c/o A. Ferguson Cartier Ave., Sept. Isles, Que., Owner Builds, **$7,000,000,** 1,200 unit HOUSING on 350 acres site Rte. 15 between Sept. Isles and airport, SEPT ISLES, QUE.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **Iraq**—BA 11/8—Directorate-General of Irrigation, Ministry of Agriculture, Bagdad, DIBIS DAM (Batmah Dam) on Lesser Zab River for irrigation Kirkuk Province, Adhaim River Basin, $8,000,000. Binnie, Deacon & Gourley, Westminster, London, SW 1, England, consult. engrs.

For additional reports see CONSTRUCTION DAILY REPORTS SECTION

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

▲ **Ariz., Phoenix**—City, City Hall, (1) STABILIZATION PONDS, 23rd Ave., diversion structure, crossing of 35th Ave. (2) REPAIRING 23rd Ave. PLANT (3) DIGESTERS to 15 MGD expansion, alt. at 23rd St. Plant; (4) 45 MGD ACTIVATED SLUDGE ADDN., 91st St. Plant, **$6,200,000.** John A. Carollo, 3308 N. 3rd Ave., consult. engr. CD 6/1/61.

EARTHWORK, WATERWAYS

▲ **Ohio and West Virginia**—U. S. Eng., 502 8th St., Huntington, W. Va., RACINE LOCKS and DAM, Ohio River near Racine, O., incl. 110 x 1,200 ft. main chamber, 110 x 600 ft. auxiliary chamber, gated low sill dam. **$76,000,000** (no appropriation).

UNCLASSIFIED

▲ **Calif., Oakland**—City and Alameda Co., Courthouse, plans by Skidmore, Owing & Merrill, 1 Bush St., San Francisco, SPORTS STADIUM. **$12,000,000-$15,000,000.** Ammann & Whitney, 111 8th Ave., New York 11, N. Y., consult. engrs. Coliseum, Inc. will operate. CD 3/28/60.

PUBLIC BUILDINGS

▲ **La., New Orleans**—City, City Hall, plans by Curtis & Davis Assoc. Archts-Engrs., 2475 Canal St., Zone 19, (P-La-3088) POLICE ADMIN, BLDG., MUNICIPAL COURT BLDG., CENTRAL LOCK-UP, CITY JAIL, POLICE MOTOR MAINTENANCE and VEHICLE STORAGE and PARKING AREA. **$8,440,000.**

▲ **N. J., Paterson**—Bd. Educ., 137 Ellison St., plans by Lee & Lee, 18 Church St., West Side HIGH SCHOOL, Totowa Ave. **$4,000,000.** Kelly & Morris Assocs., 819 Bergen Ave., Jersey City, mech.-heating and ventilating engrs. Arthur H. Bronk, 175 East Main St., Little Falls, N. J., plumbing engr. Saul Shaw & Co., 24 Commerce St., Newark, N. J., struc. engrs. CD 5/16/60.

▲ **N. Y., Brooklyn**—State Dpt. P. Wks., State Office Bldg., Albany, plans by Urbahn, Brayton & Burrows, 635 Madison Ave., New York, Zone 21, 8 story U-shaped HOSPITAL, Clarkson Ave., E. 37 St., Lenox Rd. and Brooklyn Ave., for State University of New York at Downstate Medical Center. **$20,000,000.** Constr. Fall 1961.

▲ **N. Y., Hornell**—Hornell Consolidated School Dist., Bd. Educ., plans by Fudge & Underhill, 105 W. Church St., Elmira, HIGH SCHOOL, two ELEMENTARY SCHOOLS, and SCHOOL ADDNS., **$4,350,000.** CD 5/25/61.

COMMERCIAL BUILDINGS

▲ **Idaho, Boise**—Bank Realty Co. c/o Bank of Idaho, lessee, 119, N. 8th St., 12 story BANK and OFFICE. **$5,000,000.**

▲ **Ill., Chicago**—Northwestern University, Evanston, 15 story RESEARCH, Northwestern Medical School, 303 E. Chicago Ave. **$7,500,000.** BA Spring 1962. CD 11/13/52.

▲ **Md., Baltimore**—Blaustein Interests and McClockey & Co., 1620 W. Thompson St., Phila., Pa., plans by Vincent G. Kling, 917 Corninthan Way, Phila., Pa., 30 story Blaustein Office Bldg., Charles and Fayette St. **$15,000,000.**

▲ **Mass., Chatham**—River Bay Estates, Harold J. Moye & Association, Managers, Chatham, 300 acre RESIDENTIAL COMMUNITY, Monomoy River & Pleasant Bay, **$6,000,000.**

▲ **Mass., Raynham**—Jordan Marsh Co., 450 Washington St., Boston, Mass., plans by Francis X. Gina & Assoc., 219 E. 44 St., New York, N. Y., Bay Colony SHOPPING CENTER, Jct. Rtes. 24 and 44, RAYNHAM, MASS. **$6,000,000-$7,000,000.** Syska & Hennessey, Inc., 144 E. 39 St., New York 16, N. Y., mech. engrs. Severud-Elstad-Krueger Assocs., 415 Lexington Ave., New York 17, N. Y., struct. engrs. Bids Mar. 1962. CD 7/7/61.

▲ **N. Y., New York**—Home for Aged and Infirm Hebrews of New York, 121 W. 105 St., Zone 25, plans by Joseph D. Weiss, 2 W. 46 St., Zone 36, 14 story OLD AGE HOME ADDN., 120-40 W. 106 St., **$5,000,000;** OLD AGE HOME ALTERATIONS, 121 W. 105 St., **$1,000,000.** Meyer, Strong & Jones, 230 Park Ave., Zone 16, mech. engrs. Wilcox & Erickson, 11 E. 44 St., Zone 17, struct. engrs.

▲ **N. Y., New York**—Loew's Inc., 1540 Broadway, Zone 36, 16 story HOTEL, Park Ave. and 61 St., northwest corner. **$25,000,000.** (**Correction**—architect not selected.) CD 4/17/61.

▲ **N. Y., New York**—Memorial Center for Cancer, 444 East 68th St., Zone 21, plans by Rogers & Butler, 219 East 44th St., Zone 17, 11 story MEDICAL RESEARCH LABORATORY, East 68th St. between First and York Aves. **$5,000,000.** Jaros-Baum-Bolles, 415 Lexington Ave., Zone 17, mech. engrs. Seelye-Stevenson-Value & Knecht, 101 Park Ave., Zone 17, struc. engrs. CD 1/6/61.

▲ **N. Y., New York**—S. S. Silberblatt, Inc., 25 West 45 St., Zone 36, plans by S. Brian Baylinson, 200 West 57 St., Zone 19, 33 story, 75 x 76 ft., 145,000 sq. ft. OFFICE TOWER, 600 Third Ave. and 159-163 East 39th St. northwest corner. Over **$5,000,000.** CD 6/2/61.

▲ **Tex., Harlingen**—Owner, c/o Don Tomasco, 2625 Richmond Ave., Houston, Phase 1, reinf.-con., steel frame SHOPPING CENTER. **$4,500,000.**

▲ **Tex., Wichita Falls**—Downtown Wichita Falls Park & Shop, c/o Charles N. Prothro, 900 Indiana St., plans by Donald R. Goss & Associates, archts.-engrs., 19 S. Park St., San Angelo, Phase 1, Interior A/C mall, SHOPPING CENTER, **$4,000,000.** CD 6/29/61.

▲ **Wash., Bellevue**—Overlake Park, Inc., 437 108th St. N.E., plans by John Graham & Co., 1426 5th Ave., Seattle, Zone 1, second and third phase, 750,000 sq. ft. Overlake SHOPPING CENTER. **$11,000,000.** CD 9/18/59.

▲ **Wash., Bellevue**—H. R. Watchie & Assocs., Remond, plans by Welton Becket & Assocs., 5657 Wilshire Blvd. Los Angeles 36, Calif., SHOPPING CENTER, incl. 70,000 sq. ft. office, 265,000 sq. ft. store bldg. and 200,000 sq. ft. department store. **$20,000,000.** BA 7/1/62.

▲ **Sask., Regina**—Regina General Hospital, 14th and St. John Sts., HOSPITAL ADDN. **$10,000,000.** Mark L. Nelson & Edwin Larson of Ellerbe & Co., 333 Sibley Sts., St. Paul, Minn., U.S.A. hospital consultants.

INDUSTRIAL BUILDINGS

▲ **Miss., Pascagoula** — Coastal Chemical Corp., sub. Mississippi Chemical Co., P.O. Box 563, Yazoo City, CHEMICAL PLANT ADDNS., ALTERATIONS. **$4,500,000.**

▲ **O., Cleveland**—Jones & Laughlin Steel Corp., 3 Gateway Center, Pittsburgh, Pa., FINISHING STANDS, HOT STRIP MILL MODERNIZING, at steel mill (three year program) **$100,000,000.**

▲ **Pa., Pittsburgh**—Jones & Laughlin Steel Corp., 3 Gateway Center, MODERNIZE Second Ave. STRIP MILL at steel plant, **$10,000,000.**

▲ **S. C., Ninety-Six**—Greenwood Mills, Greenwood, COTTON GOODS MFG. PLANT No. 2. **$5,000,000.** CD 4/6/60.

▲ **B. C., Port Mellon**—Canadian Forest Products Ltd., 999 W. Pender St., Vancouver, converting pulp mill to BLEACHED KRAFT PULP PRODUCING PAPER PRODUCTS MILL, **$12,000,000.** Sandwell & Co., Ltd., 1500 Alberni St., Vancouver, consult, engrs.

▲ **Ont., Kingston**—Aluminium Co. of Canada Ltd., Sun Life Bldg., Montreal, Que., ALUMINUM MILL ADDN. **$10,900,000.**

FOREIGN

▲ **Australia, Melbourne**—City, City Hall, plans by Grounds, Romberg & Boyd, 340 Albert St., Melbourne, C.2, Victoria, CULTURAL CENTER. **$9,000,000.**

▲ **Spain**—Empresa Nacional Calvo Sotelo, General Pardenas 55, Madrid, 150 mi. PIPELINE from Malaga to Puerto-Ilano, **$9,960,000.**

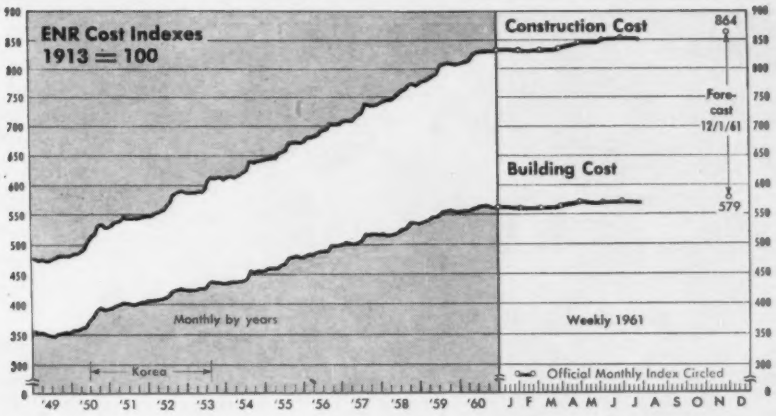
▲ **Sweden Goteborg**—Port Bd. Goteborg, Box 453, Goteborg, TUNNEL under Gota River. **$12,325,000.** Christiani & Nielsen, 41 Vester Farmingsgade, Copenhagen, Denmark, engrs. CD 6/21/61.

For additional reports see CONSTRUCTION DAILY NEWSLETTER

(Proposal Advertisements see pp. 65 to 67)

Construction Scoreboard

This Week . . .


ENR Cost Indexes 1913 = 100
Construction Cost
864
Fore-cast 12/1/61
Building Cost
579
Monthly by years
Weekly 1961
Korea
Official Monthly Index Circled
'49 '50 '51 '52 '53 '54 '55 '56 '57 '58 '59 '60
J F M A M J J A S O N D

ENR INDEXES (1913=100), 20-cities' average	Week of July 27 1961	% Change from June 29 1961	% Change from July 1960
Construction Cost	853.60	−0.01	+2.8
Building Cost	571.03	−0.1	+1.7

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

AMOUNT OF CONTRACTS LET

Contracts Awarded In 50 States By Type	This Week millions	Cum. 31 wks 1961	Chge '60-'61 %
All Heavy Construction	$458.1	$13,271.0	− 3
By Ownership			
PRIVATE	211.2	6,409.1	−11
PUBLIC	246.9	6,861.9	+ 5
State & Municipal	220.9	5,215.3	+ 5
Federal	26.0	1,646.6	+ 8
By Type of Work			
PUBLIC			
Waterworks	14.2	237.1	−20
Sewerage	12.5	432.0	+17
Bridges*	13.8	395.8	−33
Highways	90.7	2,275.7	+14
Earthwork, Dams & Waterways	6.6	533.3	+ 7
Buildings:			
Excl. Housing	62.4	1,633.3	+13
Housing	14.9	522.4	+27
Unclassified	31.8	832.7	− 8
PRIVATE			
Buildings:			
Mass Housing	94.8	2,885.3	−18
Commercial	66.2	1,572.9	+ 5
Industrial	44.7	1,687.6	+ 4
Unclassified	5.5	262.9	−53

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of July 27 millions	Cum. 30 wks 1961	Chge '60-'61 %
Corporate Securities	$ 105.9	$2,115.8	+18
State and Municipal:			
All Except Housing	78.7	3,961.2	− 3
Housing	10.4	92.9	−49
Federal Loans	0	183.7	−73
Federal Aid	2,990.6	2,990.6	+10
Total Nonfederal	$3,185.6	$9,344.1	+ 5
Federal Appropriations:			
Projects in U. S.	65.4	66.4	−95
Outside U. S.	2.3	2.3	−99
Total New Capital	$3,253.3	$9,412.8	− 9

Latest Month . . .

STATE AND MUNICIPAL BOND SALES

	1961 July	1961 7-Mos. (millions)	Percent Change from 1960 July	Percent Change from 1960 7-Mos*
Total Bond Sales	$479.4	$4,084.1	−12	− 4
BUILDINGS	212.2	1,915.9	− 7	−11
Schools	117.3	1,460.5	−31	+ 1
Housing	61.6	92.9	....	−49
Other buildings	33.3	362.5	−42	−31
HEAVY CONSTRUCTION	267.2	2,168.2	−15	+ 3
Waterworks	13.0	334.5	−71	+33
Sewerage	91.2	335.5	+124	+35
Bridges	8.3	40.4	−78	−75
Highways	38.0	501.4	+109	+84
Earthwork, dams, waterways	33.9	254.8	− 6	−33
Electric and gas utilities	7.1	84.8	−72	−52
Airports	1.8	99.2	+3784	+32
Parking facilities	1.0	16.5	+65	−15
Unclassified	72.9	501.1	−35	− 6

CONSTRUCTION MACHINERY PRICE INDEXES

Manufacturers Prices, 1947–49=100—BLS	June 1961	Percent Change from last Month	Percent Change from last Year
All Types	178.2	−0.2	+1.7
Cranes, Draglines, Shovels	173.4	0	0
Shovel, ¾ cu. yd	178.8	0	+1.9
Shovel, 1–1½ cu. yd	191.0	0	+1.5
Shovel, 2–2½ cu. yd	169.1	0	−0.8
Crane, truck mounted	165.9	0	−1.4
Scrapers and Graders	165.7	−0.6	−0.5
Scraper, 4 Wheel, 12–15 cu yd	153.3	−2.3	−2.3
Grader, heavy duty	174.1	0	+0.2
Tractors (non-farm; incl. industrial	195.1	−0.3	+1.8
Wheel-type, off-highway (January 1955=100)	127.6	−1.3	−1.3
Crawler type, 100–154 dhp	200.2	0	+2.5
Machinery, Tractor Mounted	177.9	−0.3	+5.0
Dozer, hydraulic control	201.4	0	+7.9
Loader, shovel type	166.7	0	+2.1
Specialized Machinery	159.5	0	+1.1
Ditcher	153.8	0	+2.4
Roller, tandem	228.5	0	+0.9
Roller, 3 wheels	178.7	0	0
Portable Air Compressors	183.6	0	+9.6
Contractors Air Tools	190.5	0	+4.9
Mixers, Pavers, Spreaders	161.6	0	−0.2
Mixer, truck, 6 cu yd	131.1	0	−3.0
Mixer, paving, 34 cu ft	192.9	0	−2.0
Bituminous paver	168.6	0	+1.8

Main Street, Mayville, N. D., reflects typical town-wide needs, so . . .

All-at-Once Works Program Fills

Mayville, N. D., jumped from circa 1916 to 1961 practically overnight; it bought a public works program of new streets, curbs and gutters, a water storage unit, a water distribution system and a storm-sewer network.

In terms of dollars—$1 million—in an era of multibillion-dollar government budgets, the program appears as a match flame challenging a carbon arc light. But the dollar outlay, in proportion to population, makes the program the arc light.

The community's population totals 2,190, which means the program hit each man, woman and child for $457; on a family-unit basis, cost tops $2,000 per family, exclusive of interest charges on 20-year bonds sold to finance the project.

The job also ranks as unusual in the method of performance selected by the town. All the projects were contracted for in March; by fall they will be done. So in addition to buying progress for a long time, the town also bought temporary chaos.

The town swarms with hard-hatted "outsiders." Every hotel and motel room and spare bedroom in a private home rents at a premium. To eat out is to queue-up.

And getting around town is not for the weak of heart or short of wind. Dirt windrows block streets already a shambles of torn surface littered with formwork boards and barricades. On every street scrapers, crawler tractors, backhoes and trenchers roar.

But progress must be served so the town gripped the one horn of a dilemma that would dig deep, but only temporarily. The alternative would be more years of inconvenience and discomfort.

Usually a community provides basic public services bit-by-bit over the years. Mayfield approached 1961 in a backward state, not through choice but because of terrain. Like other towns in the Red River Valley area, Mayville sits on the bed of a vast lake long since lost to ancient geologic upheavals. The community therefore boasts a surface flat as the proverbial pancake. Drainage problems reached classic proportions. Many parts of the town—including some portions of the business district—became quagmires after heavy rains and during spring thaws. Streets and sidewalks flowed ankle-deep until evaporation took its slow but welcome toll. The land was just too flat to drain.

Mayville and its Red River Valley companions accepted their lot as inescapable. But last year, Mayville acted. Officials hired Kirkham-Michael & Associates, a Fargo consulting engineering firm.

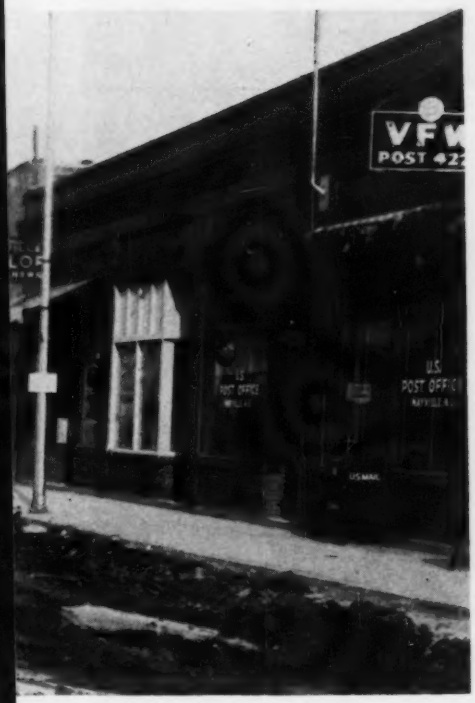
The town then solidly backed the firm's boot-strap proposals. Voters approved a $680,000 general obligation bond issue to finance street, curb, gutter and sewer construction. They also voted $225,000 worth of revenue bonds to pay for the water system. Another $50,000 came from a special county tax to improve a ball park, and Mayville State Teachers College tossed in $30,000 to finance street work in and around its campus.

For the money, residents will get nine miles of asphaltic concrete streets, 16 miles of curbs and gutters, 16 blocks of storm sewers, about 2 miles of water distribution lines and a 500,000-gal elevated water storage tank. In the process about 100,000 cu yd of earth will be excavated.

The crash-method brought Mayville financial benefits. Bids for the jobs came in extremely low. Mayor Eddie Dornacker says the all-out program saved about $100,000.

Dale Reeves, vice president of Kirkham-Michael says savings stemmed from the following:

• Size of job—The entire town was organized as a single paving district.



the Bill

Its scope allowed economic use of a large array of heavy equipment at economical cost.

• Timing – Advertised early in the season—mid-March—the call beat most others in the area. (North Dakota's construction season generally starts in late May.) The early-bird "big-job" call attracted a large number of bidders and competition was keen.

• Use of local materials—The same glacier-caused terrain that made the job a design problem also aided in its solution. Specified screen sizes, for example, allowed use of local aggregate materials in natural form.

Terrain and the manner of job operation set some tight conditions. The flatness of terrain allowed no room for variance from some fine specifications. Street grades average one-fifth of 1% in most areas and in many dropped even lower. Staking, compacting and grading called for precision performance.

Job operation set some conditions too, with six contracting companies working simultaneously in a relatively small area while an entire population carried out its daily routine.

Maintaining critical standards with construction crews of six companies practically tripping over each other requires a neatly coordinated timetable, says Ray Coleman, another Kirkham-Michael vice president.

Before work started, all contractors met with the engineers to establish job schedules and procedures. Kirkham-Michael men now coordinate and enforce these schedules.

Contractors cooperate by working as a team rather than individual companies interested only in their own tasks, Mr. Coleman says. Often, one contractor—to his own inconvenience—willingly concentrates his forces on a particular phase of a job, so that another can get on with his phase faster.

In turn, Kirkham-Michael assured taut control by assigning a five-man project engineering team to the job. This group makes certain critical design criteria are met and also works constantly with the contractors to guard against pitfalls that could delay the job.

Area-Aid Program Starts Moving

The area redevelopment program moved forward last week with government approval of a federal loan and grant to finance a water system in a community 160 miles north of Little Rock, Ark.

The town—Gassville—got a $31,000 loan and a $129,000 grant. The money will finance the water system that will permit construction of the town's first major industrial plant.

The four-county area around Gassville will get a solid economic boost. The projected plant, a $500,000 shirt factory, may eventually provide 1,200 jobs and a $2.5-million payroll.

Without the water system, the plant would have been lost to the area's economy, according to Donald Cooper, president of Capital Shirt Co. of New York City. "Fire insurance rates would have been prohibitive," he says.

Gassville finds itself in the same straitened circumstances as thousands of other communities in the nation. A small population—in this case only 233 persons—cannot finance even the most basic of community services. Total assessed valuation stands at only $48,000.

More than 15,000 communities have populations of less than 2,500, according to Census figures. And the smaller the population the more difficult does project financing become. Only in rare cases, such as North Dakota's Mayville, can a community pull itself up by its own bootstraps (see opposite page).

Since industry needs basic public services, the town lacking them fails to attract manufacturing. But lacking adequate financial strength, the small communities can't buy the services.

Although the Arkansas community won the first financial commitment for a specific project, additional moves under the distressed areas legislation entered the record.

Also last week, the federal government gave conditional approval to overall development programs submitted by seven areas in New York, Maryland, Georgia, Massachusetts, Rhode Island and West Virginia.

These approvals represent the first step in qualifying the areas for financial help under the area redevelopment program. Local organizations now may initiate projects for consideration by the Area Redevelopment Administration.

The objective will be to attract new industry or expand existing industry as a means of creating permanent jobs.

Kentucky got the first urban planning grant under the act, $164,260 that will help 47 cities improve their housing and industrial inventory (ENR July 20, p. 17).

U. S. Rumored Examining Asphalt Price Practices

A federal grand jury reportedly has started an investigation into a possible price-fixing conspiracy in asphalt sales in the south Florida highway program. Subpoenas went out to 25 companies ordering them to appear before a federal grand jury in Miami.

In Washington, the Justice Department declined to confirm or deny that the grand jury probe was under way. Federal antitrusters traditionally refuse to comment on pending grand jury investigations.

Shell Oil Co. and Texaco Inc., are reportedly among the asphalt makers included in the Florida investigation. Subpoenas, which have gone out to the companies, indicate they will be quizzed on whether they made secret agreements to fix prices through trade associations or to divide markets.

Last year, 10 companies were involved in a federal complaint charging price-fixing of asphalt, road tar and bituminous concrete in New England. They pleaded nole contendere (no defense) to criminal charges and signed consent orders in civil antitrust cases forbidding a continuance of any illegal practices.

Should the Florida Grand Jury hand down indictments, they would likely be on criminal charges of violating the Sherman Antitrust law. Normally a civil suit follows.

OLD FIRE HYDRANTS

STILL DOING 24-HOUR DUTY

IN CAMDEN, N.J.

The Camden, N.J., Water Department was formed in 1845, when James K. Polk was president. A small building was erected at the foot of Cooper Street to house the pumping station. Water mains were installed and approximately 15 years later, R. D. Wood Hydrants were tied in. Since those days Camden has grown from a community of 6500 people to a modern industrial city of 125,000. All utilities have been changed beyond recognition . . . except for a number of the original R. D. Wood Hydrants that are still in service. Conditions have changed, but the reliability built into those hydrants makes them just as effective now as they were over 100 years ago.

Like all R. D. Wood Hydrants, the oldtimers are of simple but sound construction; their operation cannot be impaired by foul weather, snow, sleet, ice or silt. Apart from the hazard of being in the path of a truck out of control or the possibility of street relocations, there is no foreseeable trouble ahead for them for many more years. There has never been better fire protection for any community than R. D. Wood Hydrants.

Conform to A.W.W.A. specifications

R. D. WOOD COMPANY

Public Ledger Bldg.
Independence Square
Philadelphia 5, Pa.

Established in 1803

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds)

School Work Rates 'A' for Jobs

School construction gives governments a fairly effective weapon to combat unemployment.

It generates 212 man-hours of work for every $1,000 of contract price. For each on-site man-hour of work, there is another 1.5 man-hours of off-site employment.

Laborers get the highest percentage of on-site work. Carpenters run a fairly close second.

These are some of the conclusions that flow from a U. S. Department of Labor study of labor requirements for public school construction. It is the first in a series authorized by Congress to determine the relative employment effects of government stimulants to different types of construction. It is based on a survey of 128 geographically scattered elementary and secondary school projects under construction in 1959.

Using the 1960 figure of $2.5 billion as the annual rate of school construction, the Department says that school construction provides more than 115,000 on-site and 160,000 off-site jobs a year.

The study shows that each $1,000 of school construction in 1959 called for 84 man-hours of on-site work and 128 man-hours of off-site work. Figures include the time required to produce and deliver materials (except furnishings) used in construction, but exclude employment related to planning and designing.

The off-site figure of 128 man-hours includes 10 for off-site construction, 78 for manufacturing, eight for transportation, 20 for trade and service and 12 for such "other industries" as forestry, mining and agriculture.

Contrary to popular belief, not much more than one-fourth of the total contract price went into on-site wages, which averaged $3.07 in 1959. The Department found that materials accounted for 56% of the cost, wages for 26% (see chart).

Laborers got the largest share of on-site work—20.1 man-hours, or 24%. Carpenters were next with 15.7 man-hours (18.7%) (see table). But carpenters received the largest share of the contract dollar (4.6 cents). The laborers' share was 4.3 cents. Bricklayers, plumbers and electrical workers each got 3 cents.

Apprentices accounted for 3.7% of the total on-site man-hours. Their use was greatest in the West and South and lowest in the Northeast.

Nearly half of the on-site man-hours—47.4%—were chalked up by employees of general contractors. Plumbing and heating contractors were the largest employers among the subcontractors.

The study found that school construction in areas of low wage rates required more on-site man-hours than projects in high wage areas, where there was greater use of skilled craftsmen.

More than 80% of the school projects in the South, for example, required 99 man-hours per $1,000 of contract price. The average for those in the Northeast was 76 man-hours.

There was a "rough indication," the Labor Department said, that the man-hours of work involved in school construction have declined by about one-half in the last 20 years, with the greater decline occurring in on-site employment.

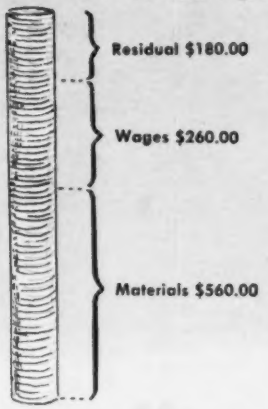
A transfer of on-site work to off-site operations over the years, it said, accounts for the fact that on-site work has declined more than off-site employment. But the total decline, it observed, reflects increased efficiency and changes in specifications.

Other studies of a similar nature are under way in the Bureau of Labor Statistics' Division of Productivity and Technological Developments. They cover highways, hospitals and public buildings. Subsequent studies are expected to cover public housing, sewer and water projects, and, eventually, all major types of construction.

Copies of the school study (Bulletin 1299, Labor Requirements for School Construction) can be purchased from the Superintendent of Documents, Washington 25, D. C., for 35 cents.

School Construction Costs

Where each $1,000 goes.



Distribution of On-Site Work

(For each $1,000 of school construction)

	Man-hours	Percent
All occupations	84	100
General supervisors	2.8	3.3
Professional, technical, clerical	.5	.6
Bricklayers	7.8	9.3
Carpenters	15.7	18.7
Cement finishers	1.5	1.8
Electrical workers	6.0	7.1
Glaziers	.6	.8
Lathers	1.2	1.4
Operating engineers	1.6	1.9
Ornamental iron workers	.9	1.1
Painters	2.8	3.3
Plasterers	1.1	1.3
Plumbers	7.9	9.4
Roofers	1.2	1.5
Sheet metal workers	2.5	2.9
Structural iron workers	1.4	1.7
Terrazzo workers, tile setters	.8	.9
Truck drivers	.7	.8
Laborers	20.1	24.0
Helpers and tenders	4.3	5.1
Watchmen	.5	.6
Other	2.1	2.6

Cement Industry Agrees To a 14-Cent Wage Boost

The nation's major cement manufacturers wound up their 1961 collective bargaining without strikes and settled for two-year contracts that provide for a 14-cent wage increase, plus fringe benefits.

The contracts have given rise to some speculation that the higher wages might have to be reflected in higher cement prices next year. But last week, industry spokesmen were generally cautious and noncommittal.

The contracts were negotiated with the Cement, Lime and Gypsum Workers International Union.

Union President Felix C. Jones said the contracts, with 25 major cement companies and numerous single-plant firms, cover about 27,000 production and maintenance workers in 135 plants.

The contracts provide for a 6-cent wage increase this year and an 8-cent increase next year. They also grant a number of fringe benefit improvements. Estimates place the total cost of the package at 24 cents.

The union and the companies have agreed to set up a cooperative wage study plan by the end of 1962.

All-wheel drive and

the TS-14 "Euc" is in a class by itself!

No matter what your scraper requirements may be — small yardage work for land conservation, secondary roads etc. to the biggest projects — the Euclid TS-14 can cut your earthmoving costs.

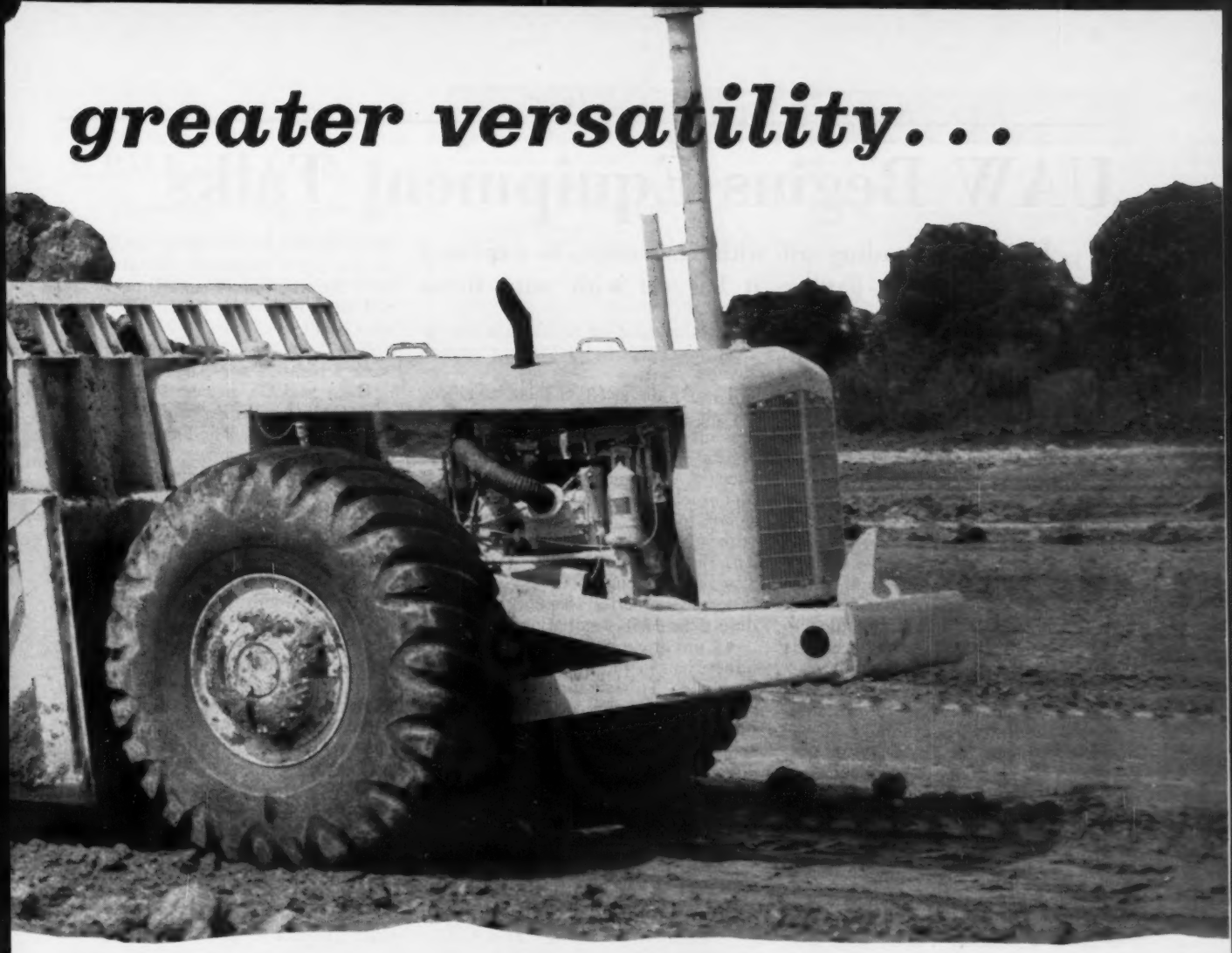
Here's performance and overall work-ability in a medium size scraper — 14 yds. struck and 20 yds. heaped — that's way ahead of any scraper of comparable capacity. With two engines (296 total h.p.) and separate Torqmatic Drives for each axle, the TS-14 gets a heaped load in a hurry . . . gets out of the borrow pit or cut fast . . . and highballs on the haul road. It can self-load in practically any material, and with a pusher it's a big producer on the toughest jobs.

If you want a one-man earthmoving spread that can work more days per year . . . that handles a wider range of jobs and isn't stalled by steep grades and adverse conditions . . . ask your dealer for the new catalog No. 555 or better yet, have him show you one in operation.

EUCLID Division of General Motors
Cleveland 17, Ohio

Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

greater versatility...



- **Twin-Power . . . a Euclid exclusive**
- **Hydraulic scraper operation**
- **Proven planetary drives**
- **One-man earthmoving spread**
- **Greater service accessibility**

All-wheel drive "Twins" give you a longer, more profitable work season

GM GENERAL MOTORS EUCLID

EUCLID

FOR MOVING EARTH, ROCK, COAL AND ORE

UAW Begins Equipment Talks

Union, in leading off with Harvester, is expected to follow the pattern it has set with auto firms

Labor contract negotiations covering nearly 100,000 members of Walter Reuther's United Auto Workers Union in four large farm equipment and construction machinery companies get under way this week.

The union had its first meeting yesterday with the biggest of the companies —International Harvester Co.—whose contract, covering about 33,000 workers, expires October 1.

Although the UAW gave no advance indication of what its demands would be, the union is expected to make about the same proposals it has presented to the auto industry. That has been the pattern in the past. The Detroit reaction to those proposals is that they are the most expensive ever thrown onto the auto industry's bargaining tables.

A spokesman for the UAW's Agricultural Implement Department said he thinks "there is a greater chance of settlements being reached this year without strikes than there were last time."

In the 1958 negotiations, three out of the four big equipment companies were struck before agreements were reached. Some plant workers were out for seven weeks at Caterpillar Tractor Co., nine weeks at International Harvester, and 11 at Allis-Chalmers Manufacturing Co.

Of particular interest this year is the elastic, challenging and provocative nature of the UAW demands as reflected in the auto industry bargaining.

Bulk of the demands are wrapped, Reuther-style, in "human values" and are aimed at more income and job security. Many strike deep—and intentionally so—into moral and social issues relating to the treatment of blue-collar workers as expendable. Some are purposely intended to raise, head-on, the wage-profit-inflation-administered price controversy.

Among the UAW proposals now before the auto companies are:

- More protection against contracting out.
- Salaries instead of wages for union members.
- Shorter workday, workweek or workyear.
- Earlier retirement.
- Restrictions on the use of overtime.
- Liberalized unemployment benefits.
- Pension and medical insurance improvements.

Also included are revisions in the annual improvement factor and cost-of-living formula.

Despite the fact that there have been reports of scattered layoffs at some of the machinery companies, the UAW thinks "the industry is not in bad shape at this time."

The chief negotiator for the union points to three reasons for feeling that strike-free settlements can be reached with the machinery firms:

- The economy is improving and is generally in better shape than it was during the 1958 negotiations.
- Current contracts expire in the fall, rather than in the summer, as they did last time. This should avoid the tension of the contract extensions that used to be necessary pending the outcome of contract talks in the auto industry.
- Several procedural matters that were sticky in the past have been ironed out. Improvements in grievance machinery at Harvester, for example, should produce a better bargaining climate. This year, the attention of negotiators should not be so easily diverted from key contract issues.

The opening talks with Harvester were scheduled for August 2 and 3.

Deere and Co. negotiators will meet with UAW bargaining teams on August 15 at Moline, Ill. The Deere contracts, covering 17,000 workers in eight Illinois and Iowa plants, expire October 1.

No date had been set as of last week for the first session with Caterpillar, which has 23,000 UAW members and a contract that expires October 1. A preliminary meeting will be held before September 1 with Allis-Chalmers, which has 15,000 UAW workers and a contract that ends November 1.

Procedures for negotiating with plants making the Oliver line of machines have not been worked out. White Motor Co., Cleveland, bought Oliver's farm machinery business.

UAW's contract with the sixth company, J. I. Case, does not expire until Sept. 18, 1962. Wage reopener talks, however, may be held this September.

Labor in Brief . . .

• Substantial increase—Nearly 2,000 plumbers in three counties south of San Francisco have ended a three-week strike with a one-year, 37½-cent contract that adds 18 cents to wages, 19½ cents to fringes. New scale is $4.45, plus 83½ cents for vacation, welfare, pensions, apprenticeship, industry promotion.

• Davis-Bacon – Prevailing wages must be paid on demolition work that is "closely related or immediately incidental" to initial construction work on the Interstate Highway System. In so ruling, the Labor Department's assistant solicitor said the value of materials salvaged must be considered in computing the value of a contract for purposes of coverage.

• Union restrictions—Restrictions on the use of paint rollers are kept in a new two-year contract that ended a two-week strike of 1,500 Boston painters. Wage and fringe benefit increases total 40 cents.

• For better relations—Directors of the National Society of Professional Engineers have authorized formation of a Functional Section for Engineers in Industry within NSPE. The Section's aim is to promote progressive professional relations between engineers, industrial management.

• Getting out the votes—An employer can give away a television set to encourage his workers to vote in a union representation election, according to the National Labor Relations Board. Such action is not an unfair labor practice, the Board said, because it is not based on how the votes are cast.

• A concession—To help organized contractors compete for small commercial and residential work, electrical workers in Watertown, N. Y., have agreed in their new labor contract to a $3.00 scale for such work. Regular scale became $3.95 with the first of two 10-cent increases under the new two-year pact.

ICBM Labor Costs

Commission sets criteria for wages and conditions

The Missile Sites Labor Commission last month established two basic principles to be observed by unions and contractors in negotiating labor contracts affecting construction work at ICBM sites.

Speaking through what it called a "labor policy statement," the Commission said:

- Wage rates, fringe benefits and other conditions of employment at missile sites should be no more costly than those that apply to other construction work performed under similar circumstances.
- In introducing new conditions, consideration should be given to standards of practice in the area and in the construction industry generally. In some areas, however, wages and benefits higher than those that prevail may be necessary to attract enough workers.

The Commission drafted the statement after studying a number of complaints about unreasonable labor contract provisions that result in excessive costs in missile site construction.

Those contracts are still under review. And the Commission said it has directed its attention, in particular, to "the pyramiding of premium pay, to excessive travel and subsistence allowances, and to unusual premiums for various types of work operations."

The Commission said it will review any specific contract referred to it by the Defense Department or by the National Aeronautics and Space Administration. Affected parties will have an opportunity to rebut charges of excessive costs. The Commission will decide whether the contract does, or does not, discriminate, cost-wise, against missile work.

The Commission urged missile site contractors and unions to review their labor agreements in the light of these recommendations.

It also recommended that unions and contractors develop a more orderly procedure of recruitment and that contracting agencies establish uniform overtime schedules for sites in the same area.

At the same time, the Commission urged unions and contractors to cooperate with local site committees in an effort to improve efficiency and performance and to make earlier completion dates possible.

The policy statement appeared in the form of "recommendations" authorized by the underlying Executive Order.

OFFICIAL PROPOSALS

Bids: August 31, 1961

The International Bridge Authority of Michigan

Advertisement for Proposals
Contract 8—Concrete Deck, Railings, Drainage and Electrical Work
for
American River Spans
of the
Sault Ste. Marie International Bridge

The International Bridge Authority will receive sealed proposals for the construction of Contract 8—Concrete Deck, Railings, Drainage and Electrical Work for American River Spans of the Sault Ste. Marie International Bridge until 10:00 A.M., Eastern Standard Time on the 31st of August 1961, at City Hall, Sault Ste. Marie, Michigan at which time and place proposals will be publicly opened and read aloud.

The work includes the construction of reinforced concrete deck with bituminous concrete wearing surface, ornamental steel handrails, pipe curbs, side barriers, drainage system and electrical facilities for one 4-span continuous truss unit with arch form top and bottom chords and a suspended roadway with two main spans each of 430 feet and end spans of 200 feet, one 3-span continuous girder unit with equal spans of 244 feet and one 4-span continuous girder unit with equal spans of 165 feet.

The Principal items of work include:

Bituminous Concrete (581 tons)	Lump Sum
Grade A Concrete Deck (1683 cu. yds.)	Lump Sum
Lightweight Concrete Deck (669 cu. yds.)	Lump Sum
Steel Reinforcement (551,402 lbs.)	Lump Sum
Galvanized Wrought Iron Pipe and Fittings	2600 Lin. Ft.
Bridge Railing—Fabrication, Erection and Painting (3575 Lin. Ft.)	Lump Sum
Bridge Railing with Side Barriers—Fabrication, Erection and Painting (1735 Lin. Ft.)	Lump Sum
Pipe Curb—Fabrication, Erection and Painting (5315 Lin. Ft.)	Lump Sum
Steel Conduit	13,100 Lin. Ft.
5000 Volt Cable	11,850 Lin. Ft.
Sound Powered Telephone Cable	6,200 Lin. Ft.
Sub-Station No. 1	Lump Sum
Service Boxes	33 Units
Roadway Lights	15 Units

Plans, Specifications, Proposal Form and Contract Documents for the work are on file in the office of Steinman, Boynton, Gronquist and London, Consulting Engineers, 117 Liberty Street, New York 6, New York and may be inspected by prospective bidders during office hours.

Plans, Specifications, Proposal Form and Contract Documents may be obtained from Steinman, Boynton, Gronquist and London, Consulting Engineers, 117 Liberty Street, New York 6, New York upon application and payment of a fee to Steinman, Boynton, Gronquist and London, of Thirty-five ($35.00) Dollars, Fifteen ($15.00) Dollars of which will be refunded upon return of the Plans to non-bidders, and all of which will be returned to bidders.

Bids must be made upon the proposal form included in the Contract Documents. Each proposal must be accompanied by draft or certified check payable to the order of the International Bridge Authority for the sum of Seventy Five Thousand ($75,000) Dollars.

Only United States Contractors may bid on this Contract.

All bidders shall be prequalified.

The right is reserved to reject any or all bids.

THE INTERNATIONAL BRIDGE AUTHORITY OF MICHIGAN
James E. Brophy, Chairman

July 26, 1961

Bids: August 10, 1961

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR
CONSTRUCTION OF ADDITION TO NIAGARA JUNCTION R.R. SERVICE BUILDING IN NIAGARA FALLS, NIAGARA COUNTY, NEW YORK
SPECIFICATION NO. PA-N-23052
NIAGARA CONTRACT NO. N 43

NOTICE TO CONTRACTORS: THE POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for construction of an addition to the Niagara Junction Railroad Service Building, in Niagara Falls, Niagara County, New York, until 10:30 A. M. Eastern Daylight Saving Time on the 10th day of August, 1961, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The work under this contract consists of the construction of a building approximately 30 feet by 75 feet. The building will have a first floor at grade with block and brick walls, interior partitions and appurtenances including electrical and mechanical services. Minor work shall also be performed in the existing service building.

All work shall be completed on or before February 1, 1962.

Plans, specifications and proposal forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, specifications and proposal forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston, 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 per cent of the total of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-N-23052

Bids: October 30, 1961

Department of Public Works · New South Wales, Australia Contract No. 20-60/61 H.&R. Deepening of Newcastle Harbour

Tenders addressed to the President of the Tender Board, Department of Public Works, Sydney, Australia, will be received up to 2:00 p.m. on Monday 30th October 1961 for the deepening of navigable channels at Newcastle Harbour to a depth of 37 feet. The work involves the dredging and disposal of some 800,000 cubic yards of silt and loose material and 600,000 cubic yards of rock.

Specifications which include small scale reproductions of all relevant plans may be examined at:

Department of Public Works, Sydney, New South Wales, Australia.
Melbourne Harbor Trust, Melbourne, Victoria, Australia.
Department of Harbours and Marine, Brisbane, Australia.
South Australian Harbours Board, Adelaide, South Australia.
Office of the Agent General for New South Wales, London, England.
Office of the Commissioner for New South Wales in U.S.A., 680 Fifth Avenue, New York, U.S.A.

Specifications may be purchased at the Department of Public Works, Sydney, and the Offices of the Agent General in London and the Commissioner for New South Wales in New York, for £A5 ($11.20) per copy. Contact prints of plans may be obtained from the Department of Public Works, Sydney, at a charge of £A3.10.0 per set of 14 prints. Individual prints can be provided at A5/- per print.

Tenderers may obtain copies of the specification by air freight on arranging to remit £A5.

P. N. RYAN
MINISTER FOR PUBLIC WORKS.

District of Columbia—Curtain Rails Infirmary Bldg.—Dept. of Buildings and Grounds, D. C., July 21, 1961. FURNISHING AND INSTALLING CURTAIN RAILS AT THE INFIRMARY BUILDING, D. C. VILLAGE, BLUE PLAINS, S.W., WASHINGTON, D. C. (INVITATION NO. C-6220-B). (Wage rates have been predetermined by Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Penn. Ave., N.W., No deposit required. (Phone NA 8-6000, Ext. 448). SEALED BIDS to be opened 3:00 PM, EDT, August 4, 1961, in Room 424, 499 Penn. Ave., N.W.

Bids: August 24, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Canal Law and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 24th day of August 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, F. J. Fuller, District Engineer, 353 Broadway, Albany, N. Y.						
Essex ((Rte. 9N)	RC 61-137	Westport-Elizabethtown, S.H. 1496	5.92	Asphalt Concrete	$19,000 Plans $5	$330,000
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee St., Utica 1, N. Y.						
Herkimer	TC 61-3	Herkimer Village: Caroline Street, S.H. 48-12 Herkimer Village: State Street, S.H. 48-11	0.95	Traffic Signals	$5,000 Plans $5	91,000
Herkimer	M 61-8	Days Spillway—Barge Canal—Approx. ¾ Mile East of Utica City Line	....	Rehabilitation of Race Behind Spillway Headgate	$2,700 Plans $5	53,000
DISTRICT No. 3, E. E. Towlson, District Engineer, 333 E. Washington St., Syracuse, N. Y.						
Onondaga (Int. Trg. Rte. 281)	FISH 61-17	Interstate Route Connection 571 (Jamesville-Dewitt) Syracuse-Fayetteville, S.H. 5587 Proj. EACI-281-2(49)	2.52 (2.35 Acc.)	Asphalt Conc.=3.46 Mi.; Misc. Work=1.41 Mi.; Hgs Comp. I-Beam, 3 Sps. 162.75′ Tot.; 2 Triple Reinf. Conc. Box Br. 55′ Sp. Ea.; Double Reinf. Conc. Box Br. 42′ Sp.	$150,000 Plans $5	2,650,000
Oswego (Rte. 126)	FARC 61-108	Mapleview-Checkered House, S.H. 9284 Proj. S-522(2)	0.97	Asphalt Concrete, Type 1A	$8,500 Plans $5	152,000
Oswego	FASS 61-9	Bethel Corners-Hannibal (County Road) Proj. S-2(2)	4.43	Asphalt Concrete	$34,000 Plans $5	632,000
Seneca (Rte. 96)	FARC 61-30	Waterloo Village (Fayette St.) (S.H. 1399; Waterloo Village, S.H. 1211; Waterloo Village, S.H. 1211A Proj. F-626(7)	0.47	Asphalt Concrete, Type 2A, I-Beam Bridge 73.5′ Sp. Widening 2 Prestressed Conc. Brs.; 3 Sps. 86′ Tot. 2 Sps. 100′ Tot.	$23,000 Plans $5	422,000
Tompkins (Rte. 96)	FARC 61-103	Trumansburg Village, S.H. 5206 Proj. F-128(4): F-494(3)	1.56 (0.09 Acc.)	Asphalt Concrete, Type 2A=1.61 Mi.; Misc. Work=0.04 Mi.; Repairs to Stone Arch Bridge 28′ Span	$30,000 Plans $5	566,000
Tompkins (Rte. 227)	FARC 61-123	Perry City-Trumansburg, S.H. 5575 Proj. F494(4)	0.58	Asphalt Concrete, Type 1A	$6,000 Plans $5	102,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Monroe	FATS 61-19	Rochester City: Inner Loop (FAC 60-7) (Front Street to North Street). (Proj. U-1089(15)	0.94	Traffic Signs	$3,800 Plans $5	69,000
Monroe	FASS 61-7	Mount Read Boulevard (County Road) Proj. S-587(1)	0.80 (0.47 Acc.)	Asphalt Concrete=1.23 Mi. Misc. Work=0.04 Mi.	$25,000 Plans $5	453,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, 65 Court Street, Buffalo, N. Y.						
Erie	FASCE 61-2	Scajaquada Creek Expressway (at Delaware Park) Proj. U-1087(5)	0.11	Pedestrian Overpass I-Beam 78′ Sp. Reinf. Conc. Ramps 524′	$9,000 Plans $5	169,000
Niagara (Int. Trg. Rte. 190 & Rte. 18D)	NIE 61-5 FINIE 61-4 FARC 61-129	Interstate Route 506, Niagara Expressway, Contract 5 (North Grand Island Bridge to Stephenson Ave.) Stephenson Ave. to Gill Creek) Porter Ave. Pt. 1, S.H. 1756 Porter Ave. Pt. 2, S.H. 1858 Proj. EACI-EACIG 190-1(43); S-606(2)	4.50 (5.29 Acc.)	9″ Cem. Conc. Pavt., 2 at 24′ Var.=4.02 Mi.; Asph. Conc.=0.43 Mi.; Misc. Work=0.05 Mi.; Access=1.53 Mi. Cem. Conc.; Pavt. & 3.76 Mi. Asph Conc.; 10 H.G.S. Comp. I-Beam, 3 Sps. 141.6′ Tot.; 4 Sps. 167.4′ Tot.; 3 Sps. 141.6′ Tot.; 4 Sps. 167.3′ Tot.; 3 Sps. 116.3′ Tot.; 3 Sps. 116.3′ Tot.; 3 Sps. 155.9′ Tot.; 3 Sps. 156.8′ Tot.; 3 Sps. 178.7′ Tot.; 3 Sps. 177.9′ Tot.; 2 H.G.S. Comp. Pl. Gird. Br., 3 Sps. 211.6′ Tot.; 3 Sps. 212.1′ Tot.; 2 RRGS Comp. I-Beam, 4 Sps. 229.5′ Tot.; 4 Sps. 229.5′ Tot.; 2 RRGS Comp. Pl. Gird., 7 Sps. 535.1′ Tot.; 7 Sps. 611.2′ Tot.	$570,000 Plans $10	10,374,000
Niagara	PSC 6607	Grade Crossing Elimination (Third Phase N.Y.C.R.R.; Erie R.R., Lehigh Valley R.R. Niagara Junction R.R.	....	Railroad Relocation; Miscellaneous R.R. Yard Work; 1—66′ Span R.R. Bridge (Steel Plate Girder) 1—Double Box R.C. Culvert; Miscellaneous Paving Work	$300,000 Plans $100 Large Size Only	5,515,000
DISTRICT No. 6, W. J. Dennis, District Engineer, 30 W. Main Street, Hornell, N. Y.						
Steuben (Rte. 371)	RC 61-120	Cohocton-Naples, Pt. 1, S.H. 5611	2.64	Asphalt Concrete=2.48 Mi. Misc. Work=0.16 Mi.	$15,000 Plans $5	262,000
DISTRICT NO. 8, M. N. Sinacori, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Dutchess	FAC 61-12 FARC 61-96	City of Poughkeepsie: North-South Arterial Highway Delafield Street, S.H. 1762. Proj. U-322(21)	2.46	Demolition	$11,000 Plans $5	192,000
Orange (Rte. 94)	RC 61-134	Newburgh-Woodbury, S.H. 42	0.01	Removal of Boulder	$120 Plans $5	2,000
DISTRICT No. 9, J. C. Frederick, District Engineer, 71 Frederick St., Binghamton, N. Y.						
Broome (Int. Trg. Rte. 81)	FIC 61-14	Interstate Route 505: Five Mile Point to Broad Avenue (Binghamton State Hospital to Broad Avenue) Proj. I-81-1(13)	0.89	Demolition	$3,500 Plans $5	61,000
Delaware (Rte. 10)	FARC 61-133	Colchester-Delancey, S.H. 1272; Delancey-Delhi, S.H. 1441. Proj. F-845(4)	5.35	Asphalt Concrete	$65,000 Plans $5	1,199,000
DISTRICT No. 10, A. M. Sarr, District Engineer, 325 W. Main St., Babylon, L. I., N. Y.						
Kings	FIBQE 61-1	Interstate Route Connection 512 Brooklyn-Queens Expressway, (Concord St. to Morgan Avenue) Contract 19. Proj. I-278-1(41)	3.30	Mall Barriers, Fencing, Landscaping, Misc. Work Rehabilitation of 2 Viaducts	$33,000 Plans $5	590,000
Nassau & Suffolk	FATS 61-20	Conduit Boulevard ,Part 5, S.H. 5701A; Sunrise Highway Extension, Part 1, S.H. 8474; Sunrise Highway Extension, Part 2, S.H. E-8438; Sunrise Highway Extension, Part 2A, S.H. 8470. Proj. U-947(22)	4.37	Traffic Signs and Delineators	$12,000 Plans $5	223,000
Suffolk	FARC 61-135	Sunrise Highway Extension, S.H. 59-13; Sunrise Highway Extension, S.H. 57-22; Bridgehamton-Devon, Part 2, S.H. 1524. Proj. F-559(14)	4.04	Roadside Improvement	$7,000 Plans $5	127,000
Suffolk	FASS 61-8	William Floyd Parkway Extension (C.R. 46A); (Sunrise Highway Extension to Moriches-Middle Island Manorville Road). Proj. S-531(3)	2.25	Asphalt Concrete=2.13 Mi. Misc. Work=0.12 Mi.	$46,000 Plans $5	830,000
Suffolk	FIIB 61-2	Fire Island Inlet Bridge Superstructure (Contract 2)	0.80	Reinf. Conc. Slab Pavt.=0.80 Mi. Including Superstructure for 27 Span Bridge 3 Steel Arch Sps., 2 at 233.3′, 1 at 600′, 22 Steel Gird. Sps. at 138′ Ea., 2 Steel Sps. at 45′ Ea.	$220,000 Plans $5	3,956,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act. of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: August 10, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and CANAL LAW, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 10th day of AUGUST, 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, F. J. Fuller, District Engineer, 353 Broadway, Albany 1, New York						
Essex	FASS 61-6	Tahawus-Schroon River, Part 4, County Road 2B Proj. S-1047(4)	3.63	Top course Broken Stone, Bit. Double Surf. Treat. Twin Box Conc. Culvert, 1 Span 27.4'	$35,000 Plans $5	$627,000
Saratoga Warren (Rte. 9)	R.C. 61-82 C. 61-3	South Glens Falls Village: Saratoga Avenue and Main Street, S.H. 5598 City of Glens Falls: Glen Street Arterial Highway (Hudson River to Oakland Street)	0.28	Asphalt Concrete Reconstruction and Widening of Bridge Deck 736' Long, Prestressed Concrete Beam Bridge, 64.6' Span	$32,000 Plans $5	587,000
Saratoga (Int. Trg. Rte. 87)	FIM 61-2	Interstate Route 502 (Clifton Park to Malta) Proj. I-87-3(44)167	7.47	Plastic Pavement Markings	$4,500 Plans $5	80,000
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Oneida	M 61-9	Nine Mile Spillway on the Erie Canal	....	Rehabilitation of Spillway and Misc. Gate and Channel Work	$9,000 Plans $5	175,000
Oneida	M 61-11	Schuyler Street Bridge Over Erie Canal (E-45) (Town of Marcy)	....	Removal of Structure and Misc. Work	$1,200 Plans $5	21,600
DISTRICT No. 3, E. E. Towlson, District Engineer, 333 E. Washington Street, Syracuse, N. Y.						
Cortland (Rte. 13)	FARC 61-9	Dryden, S.H. 215: Dryden-Cortland, Pt. 2, S.H. 535 Proj. F.U.-513(6)	4.36	Asphalt Concrete, Type 1A	$50,000 Plans $5	952,000
Onondaga (Int. Trg. Rte. 81)	FIRC 61-128	Interstate Route 505 (Syracuse-Mattydale, S.H. 54-3 Includ. Interchange with New York State Thruway and 7th North Street, C.R. 221) Proj. I-81-2(61)	2.40 (4.10 Acc.)	Asphalt Conc.=0.63 Mi.; Cem. Conc. Pvt.=2.69 Mi.; Misc. Work=3.18 Mi.; Toll Utility Bldg., Plaza Canopy, Plaza Islands and Associated Work: 2 H.G.S. Comp. Beam, 4 Sps. 179.5' Tot., 4 Sps. 179.25' Tot.	$127,000 Plans $5	2,306,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, N. Y.						
Monroe (Int. Trg. Rte. 490)	FIC 61-15	Interstate Route Connection 580 (Rochester City: Eastern Expressway, Parts 2 & 3, S.H. No. FIC 58-2) Proj. I-490-2(25)	2.50	Roadside Development	$6,000 Plans $5	105,000
Monroe (Int. Trg. Rte. 490)	FIM 61-3	Interstate Route Connection 580 (Culver Road to Winton Road) Rochester Outer Loop, Part 2, FAC 59-8 & PASH 59-14 (Blossom Road to Winton Road) Proj. I-490-2(28), U-1097(8)	3.04	Plastic Pavement Markings	$1,500 Plans $5	28,500
Wyoming (Rtes. 39,19A)	FARC 61-130	Pike-Castile, Part 2, S.H. 8299: Castile-Portageville, S.H. 8164. Proj. F-453(5), F-380(9)	3.46	Asphalt Conc.=3.39 Mi. Misc. Work=0.07 Mi.	$24,000 Plans $5	421,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, N. Y.						
Jefferson (Int. Trg. Rte. 81)	FIM 61-4	Interstate Route 505 (Section 7AB-1) Jefferson County Line to State Highway 184 Proj. I-81-3(23)	4.60	Plastic Pavement Markings	$2,600 Plans $5	48,500
DISTRICT No. 10, A. M. Sarr, District Engineer, 325 W. Main Street, Babylon, L. I., N. Y.						
Kings (Int. Trg. Rte. 278)	FIGE 61-2	Interstate Route Connection 512, Gowanus Expressway —Contract 6 (3rd Avenue at 53rd Street to 4th Avenue at 65th Street) Proj. EI-U-278-1(63)	0.80 (1.33 Acc.)	7½" Reinf. Conc. Slab Roadway=0.66 Mi.; Misc. Work=0.14 Mi.; Reinf. Conc. Ramps=0.53 Mi.; Sheet Asph. Pavt.=0.67 Mi.; Misc Work=0.13 Mi.; Elevated Structure Steel Girder with Conc. Slab=3,474'; Ramps and Parkway Conn. 2,790'	$850,000 Plans $10	15,369,000
Nassau	FANE 61-1	Nassau Expressway, Contract 2 (Burnside Avenue to Lakeside Drive). Proj. U-1098(6)	1.20	Demolition of Buildings	$2,700 Plans $5	49,000
Queens	FAWB 1-1	Woodhaven Boulevard (Bridge Over Long Island Railroad). Proj. UG-1148(1)	0.34	Asphalt Concrete=0.34 Mi.; Rehabilitation of R.R.G.S. Over L.I.R.R., I-Beam, 7 Sps., 280.5' Tot.	$121,000 Plans $5	2,209,000
Queens	FINB 61-1 FAVWE 61-2 FAGCP 61-2	Interstate Route Conn. 515, Northern Boulevard, Cont. 1 (Grand Central Parkway to Flushing River), Van Wyck Expressway Extension (at the Flushing River Interchange) Grand Central Parkway Proj. EACI 678-1(58), U-1085(20), U-899(3)	2.02 (7.00 Acc.)	8"-10" Cem. Conc. Pvt. 2 @ 36' Var.=1.12 Mi.; Cem. Conc. Pvt. with Carb. Black=0.74 Mi.; Asph Conc.=0.16 Mi.; Access=4.16 Mi.; Cem. Conc. Pavt. & 2.84 Mi. Asph. Conc.; 3 Hgs Comp. I-Beam, 10 Sps. 296.4' Tot., 3 Sps. 169.7' Tot., 8 Sps. 480' Tot.; 3 Viaducts (Hgs) Comp. I-Beam, 10 Sps. 726.5' Tot., 17 Sps. 814.5' Tot., 15 Sps. 626.4' Tot.; Hgs. Comp. Pl. Gr., 3 Sps. 147.0' Tot.; 4 Viaducts (Hgs) Comp. I-Beam & Pl. Girder 16 Sps., 1,277.5' Tot., 101 Sps. 3,160.2' Tot., 10 Sps., 529.1' Tot., 30 Sps. 892.9' Tot.; Rehabilitation of Portion of Girder Bridge, 4 Sps. 150' and of 2 Rigid Frame H.G. Sps. 1 Sp., 41', 2 Sps. 133'	$1,300,000 Plans $10	24,070,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal Aid Highway Act. of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Department of Public Works" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bid deposit, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in the "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSAL

RATE: $2.70 per line (or fractional) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, P. O. Box. 12, New York 36, N. Y.

District of Columbia—Highway Construction—Dept. of Highways & Traffic, D. C., July 24, 1961. CONSTRUCTION OF ROADWAY AND STRUCTURES, SOUTH APPROACH TO NEW WEST HIGHWAY BRIDGE OVER POTOMAC RIVER, VICINITY 14TH STREET, FEDERAL-AID PROJECT INTERSTATE I-95-1(30)0, Contract No. 5, Invitation No. C-622-H, consist. of approx. 8,248 lin. ft. combination portland cement concrete curb and gutter (9" curb); 1,377 cu. yds. structure concrete, class "BB" and 3,805 cu. ft. Class B, Stone Masonry. (Wage rates have been predetermined by Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Penn. Ave., N.W., upon deposit of a certified check for $60.00 per set, payable to D. C. Treasurer (Phone NA 8-6000, Ext. 448). SEALED BIDS to be opened 3:00 PM, EDT, August 22, 1961, in Room 424, 499 Penn. Ave., N.W.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5639) will be received at Paonia, Colorado, until 10 a.m., Mountain Standard Time, August 31, 1961, for furnishing labor and materials for Ironstone Diversion Dam and Ironstone Canal, Station (-)1+15.11 to Station 6+48, Uncompahgre Project, Colorado. Location near Montrose, Colorado. Principal items are 6,700 cu. yds. of excavation; 540 cu. yds. of concrete; furnishing and installing one 24-foot by 9-foot and three 10-foot by 7-foot radial gates and hoists and two 5,000-lb. capacity radial-gate hoists; and other work. Completion time 180 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City, Utah; P. O. Box 346, Paonia, Colorado; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner

OFFICIAL PROPOSALS

Bids: August 28, 1961

Proposed Improvements to the Sanitary Sewerage System of Lewes, Delaware

NOTICE TO BIDDERS

Sealed bids for the construction of proposed improvements to the sanitary sewerage system of Lewes, Delaware, under Project No. WPC-Del-4 will be received by the Board of Public Works of Lewes in their office located at 129 Second Street, Lewes, Delaware, until 8:00 P.M. (E.D.T.) Monday, August 28, 1961, at which place and time the bids will be publicly opened and read aloud.

The work is divided into two parts (I, II) and each part is sub-divided into two schedules (A, B). Work covered by each schedule includes but is not limited to the following:

PART I—SCHEDULE A

Three Ejector-Type Underground Sewage Pumping Stations (Nos. 1, 2, and 3); One Standard-Type Sewage Pumping Station (No. 4); 0.70 MGD Primary-Type Sewage Treatment Plant; 364 Piles; Grading and Paving East Massachusetts Avenue, Etc. (Plant Access Road); 4700 C.Y. Select Material (Borrow); and Repaving.

PART I—SCHEDULE B

6420 L.F. 8", 10", and 16" Clay and Cast Iron Pipe Intercepting and Outfall Sewers; 7730 L.F. 6", 8", and 12" Cast Iron Pipe Force Mains (including 12" Canal Crossing) for Pumping Stations Nos. 1 through 4; 26 Standard-Type Manholes (250 V.F.); 7 Diversion-Type Manholes; 80 MBM Sheeting Left in Place; 300 Tons Excavation and Refill Below Subgrade; 2100 Tons Sand Jackets for Cast Iron Pipe in Marshland; 2800 C.Y. Select Material (Borrow); 480 Tons Mineral Aggregate for Temporary Repaving; and 1680 S.Y. Bituminous Surface Treatment.

PART II—SCHEDULE A

Three Ejector-Type Underground Sewage Pumping Stations (Nos. 5, 6, and 7); One Standard-Type Sewage Pumping Station (No. 8); 5500 L.F. 6" and 8" Cast Iron Pipe Force Mains for Pumping Stations Nos. 5 through 8; 920 L.F. 8" Clay and Cast Iron Pipe Emergency Overflow for Pumping Station No. 8; 1400 C.Y. Select Material (Borrow); and Repaving.

PART II—SCHEDULE B

6340 L.F. 6" Clay Pipe House Connections, 32180 L.F. 8" Clay Pipe Sewers; 175 Manholes (1065 V.F.); 20 MBM Sheeting Left in Place; 12000 C.Y. Select Material (Borrow); 870 Tons Mineral Aggregate for Temporary Repaving; and 8000 S.Y. Miscellaneous Types Permanent Repaving.

Alternative bids are required under Schedule A of Part I in connection with (1) reduction in scope of grading and fencing at the sewage treatment plant site, (2) elimination of the digester floating cover, together with its position indicator, and (3) elimination of glass cover and lighting over two sludge beds.

The bidder at his option may bid on any schedule, any two or three schedules, or all four schedules. Also at his option, he may bid (on an all or none basis) on any or all of the following combination: (1) Schedules A and B of Part I, (2) Schedules A and B of Part II, (3) Schedule A of Part I and Schedule A of Part II, (4) Schedule B of Part I and Schedule B of Part II, and (5) all Schedules of Part I and Part II. Schedules bid in combination must also be bid individually.

This project will be financed with funds furnished by the Board of Public Works of Lewes together with Federal grants obtained under the provisions of Public Law 660.

The attention of bidders is directed to the Special Conditions covering this work, which include the Anti-Kickback Regulations issued by the Secretary of Labor (29 CFR Part 3) and other special requirements.

Plans, specifications, and other contract documents may be examined at the office of Bayard V. Coulter, General Manager of the Board of Public Works of Lewes located at 129 Second Street in Lewes, Delaware, or may be obtained from the office of Clarke Gardner and Percy Sterling, Consulting Engineers, Calvert and Bond Streets, Salisbury, Maryland, upon deposit of $50.00 for the initial set and $40.00 for each additional set. If the documents are returned in good order within 30 days after the opening of bids, the full amount of the original deposit for one set will be returned to each actual bidder. A refund of $20.00 will be made to non-bidders and subcontractors, or for each additional set of documents obtained by actual bidders.

Each bid must be accompanied by a properly prepared bid bond satisfactory to the Board of Public Works of Lewes in an amount not less than 5% of the total of the schedule or schedules as separately bid.

The Board of Public Works reserves the right (1) to award separate contracts to the lowest qualified bidder for each schedule, utilizing any or all of the alternatives relating to Schedule A under Part I, (2) to award one or more contracts to the lowest qualified bidder or bidders for schedules bid in combination, and (3) to award separate contracts to the lowest qualified bidders on the basis of a combination of (1) and (2) above—all as may be in its best interest. The right is further reserved to consider informal any bid not prepared and submitted in accordance with the provisions of the Contract Documents and to waive any informalities in or reject any or all bids.

BOARD OF PUBLIC WORKS OF LEWES
William T. Manning, President
Bayard V. Coulter, General Manager
July 25, 1961

Board of Education Bureau of Construction

Notice Re: Prequalification Forms for Contractors

APPROVED AS TO FORM
Acting Corp. Counsel

NOTICE IS HEREBY GIVEN THAT The Deputy Superintendent of Schools, Office of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York will receive applications for prequalifications from contractors who may wish to submit bids for the proposed hereinafter specified contracts. For the general construction, plumbing and drainage, heating and ventilating, and electrical work and lighting fixtures of: Public School 309, (New Building) Ralph, Madison and Monroe Streets, Borough of Brooklyn. The prequalification application form must be secured at the Office of School Buildings, Bureau of Construction, Room 407, 42-15 Crescent Street, Long Island City 1, New York and submitted to the Deputy Superintendent of Schools at the same above address.

Bids when advertised, will be received only from prequalified bidders.

The time for submitting prequalification applications by contractors will expire on Monday, August 21, 1961.

JOSEPH R. WEISS
Deputy Superintendent of Schools
Starting: Monday, July 24, 1961
Five (5) days.

Dated: July 20, 1961
JJF:dem

Bids: September 12, 1961

Directorate of Highways Ministry of Communications and Public Works Republic of Honduras

ADVERTISEMENT FOR BIDS
FOR
HIGHWAY AND BRIDGES

Western Highway Extension—El Salvador Border to Santa Rosa de Copán Section 1 (Contract No. 61-2-P) and Section 3 (Contract No. 61-1-P)

Sealed proposals for the above noted contracts will be received by the Director General at the Office of the Ministry of Communications and Public Works, Tegucigalpa, D. C., Honduras, C. A., until 10:00 A.M., Honduras time, on September 12, 1961, and then publicly opened.

Prospective bidders can obtain copies of the plans, specifications and contract documents from the Office of the Director General of Highways, Tegucigalpa, D. C., Honduras, for a fee of L 100.00 for Section 1, and L 200.00 for Section 3. A Contractor's financial Statement and Experience Questionnaire and a Plan and Equipment Questionnaire on forms supplied by the Directorate of Highways will be required of all bidders. All proposals must be on the forms prescribed by the Directorate of Highways and must comply with the terms and conditions set forth in the Contract Documents.

Each proposal must be accompanied by a Proposal Guaranty in the amount of ten (10) percent of the total amount shown in the Proposal Form Unit Price Schedule in the form and manner specified in the Instruction to Bidders.

Individuals or firms doing business under fictitious names and all foreign corporations shall register with the Ministry of Communications and Public Works, Tegucigalpa, D. C., Honduras, C. A., before any proposal submitted by such corporations, individuals or firms will be considered.

Award of the above contracts, if any award be made, will be to the lowest responsible bidder or bidders. The Government reserves the right to reject any and all proposals and further reserves the right to waive any informality in proposals received when such rejection or waiver is in the best interest of the Government.

The Government of Honduras has entered into a Loan Agreement with the International Development Association for a Loan in various currencies to finance the foreign exchange costs and part of the costs in local currency of a Highway Construction Project of which these contracts will form a part. Also, the Interamerican Development Bank has granted the Government a loan for the same purposes.

DIRECTOR GENERAL OF HIGHWAYS
Ing. Jorge Begrán Fiallos
July 1, 1961

Bids: August 24, 1961

The Port of New York Authority New York International Airport

ADVERTISEMENT
ALTERATIONS TO BUILDING No. 105
CONTRACT O & M 609

Sealed proposals for the alterations to Building 105 at New York International Airport will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M. o'clock Thursday, August 24, 1961, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of Proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York,
August 3, 1961

District of Columbia—Sewer & Tunnel Construction—Dept. of Sanitary Engineering, D. C., Office of the Potomac Interceptor, July 12, 1961. UNIT #1, the VIRGINIA TUNNEL and POTOMAC CROSSING OF THE POTOMAC INTERCEPTOR SEWER, near Great Falls, Fairfax County, Virginia, Invitation No. C-61143-S (Contract No. DCF C-18957), consisting of the following: TUNNEL CONSTRUCTION: 13,835 lin. ft. 78" dia. concrete lined sewer in tunnel, including access shafts, junction structures and vent structures. OPEN CUT CONSTRUCTION: 3,094 lin. ft. 78" dia. reinf. concrete sewer pipe across Potomac River: 1,635 lin. ft. 54" dia. reinf. concrete sewer pipe. (Wage rates have been predetermined by Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Penn. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer. (Phone NA 8-6000, Ext. 448). SEALED BIDS to be opened 3:00 PM, EDT, August 9, 1961, in Room 424, 499 Penn. Ave., N.W.

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

Bids: August 29, 1961

Cannonsville Bridge
Contract 464

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M. Eastern Daylight Saving Time on Tuesday, August 29, 1961, for Contract 464, for the construction of the Cannonsville Bridge across the Cannonsville Reservoir, including short portions of the adjoining highway approaches. The Cannonsville Bridge will be a two lane highway bridge with a superstructure supported by six piers and two abutments. The piers and abutments will be founded on cast-in-place concrete piles and will be constructed of reinforced concrete with certain portions faced with granite. The superstructure will have a total length of 1,200 feet between abutment bearings and will consist of seven spans of structural steel girders and a deck of reinforced concrete. The deck will have a roadway surfaced with asphalt concrete and a safety walk with steel railing at each side. There are included in this contract approximately 360 linear feet of adjoining highway work on the southerly side and approximately 400 linear feet on the northerly side of the Cannonsville Bridge. These highway approaches to the bridge will be paved with asphalt concrete. All work shall be as set forth in the specifications.

Pamphlets of the contract can be obtained in the Secretary's office, Room 1312, at the above address, upon application in person or by mail, by depositing the sum of $10.00 for each pamphlet. There will be a charge of $1.50 to cover mailing costs for each set of contract pamphlets requested. For further particulars apply at the office of the Chief Engineer at the above address.

ARTHUR C. FORD, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; MARTIN T. GERAGHTY, Chief Clerk.

Bids: August 24, 1961

The Port of New York Authority
George Washington Bridge
Lower Level Expansion

ADVERTISEMENT
PAINTING STEEL
IN
LOWER LEVEL AREA
CONTRACT GWB-190.047

Sealed proposals for the painting of Structural Steel in the Lower Level Area of the George Washington Bridge will be received at the office of the Chief Engineer of the Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Thursday, August 24, 1961, at which time said proposals will be opened and read in Room No. 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, August 3, 1961

Read the Official
Proposal Columns of
ENGINEERING NEWS-RECORD
This Week and Every Week

OFFICIAL PROPOSALS

OFFICIAL PROPOSALS

INFORMAL NOTICE

Proposals to be Solicited

DRAINAGE BOARD FOR THE TWELVE TOWNS RELIEF DRAINS, Oakland County, Michigan.

Formal advertisement soliciting construction proposals for "Twelve Towns Relief Drains", a multi-million dollar drainage project in the southeastern portion of Oakland County, Michigan, will be appearing in both the "Engineering News-Record" and the "Michigan Contractor and Builder" early in August, 1961, and we are taking this means of informally bringing this project to the attention of all who may be concerned. Proposals will be received on each of four separate dates in the latter part of September, 1961, the exact dates, time and place to be announced in the formal advertisement. Twenty two (22) separate contracts are involved, the advertisement to specify the date of bid opening for each separate contract.

The total estimated cost of this project is $47,500,000. Slightly in excess of 43 miles (229,000 lineal feet) of covered drains are included in the project, approximately 41% of which will be tunnel construction and the balance "open cut" (covered drain) construction. In excess of 73,000 feet is of 10'-0" diameter or larger, and in excess of 167,000 feet is of 7'-0" diameter or larger. Comprehensive soil test borings which we have had made indicate reasonably uniform sub-soil conditions of favorable character for both tunnel and open cut work.

Your attention is directed to the fact that bidders will be limited to contractors pre-qualified with the Michigan State Highway Department, Lansing, Michigan. This advance notice will enable contractors who may not already be pre-qualified, to apply for and receive their pre-qualification well in advance of the dates for receiving bids. Such application should be directed to Mr. H. H. Morgan, Head of Contract Section, Michigan State Highway Department, Lansing, Michigan.

Bids: August 10, 1961

Delaware River Port Authority of the Commonwealth of Pennsylvania and the State of New Jersey

Administration Building
Camden, New Jersey
BENJAMIN FRANKLIN BRIDGE
CONTRACT NO. 10-E

Sealed bids will be received for Demolition and Removal of Buildings, Backfilling, Grading, Cindering and Miscellaneous Work, at the Benjamin Franklin Bridge Site, Camden, New Jersey, known as Contract No. 10-E, at the office of the Director of Engineering of the Delaware River Port Authority, Administration Building, Benjamin Franklin Bridge Plaza, Camden, New Jersey, until 2:00 P. M., Eastern Daylight Saving Time, Thursday, August 10, 1961, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for the bidders is given in the Contract Documents and Specifications for this Contract, which may be obtained upon deposit of $10.00, which will be remitted upon receipt of bid or the return in good condition of the copies so taken, within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the amount of $5,000, payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, together with a financial statement and a list of comparable work successfully completed, all of which must not be enclosed with the sealed bid but handed in separately. The surety's consent must be shown. The bidder to whom the Contract is awarded will be required to furnish a Performance and Labor and Materialman's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received, to reject any or all bids and to award the Contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
C. H. McWILLIAMS
7/20/61. SECRETARY

GENERAL MANAGER
CRUSHED STONE QUARRY OPERATION

*** Ready Mix and Bituminous Concrete**
*** Precast Pipe and Prestressed Concrete**

Nationally known diversified operation has immediate opening for proven management executive experienced in this field.

The man we seek must have had responsibility for the direction and management of all phases of the business—mining, manufacturing, distribution, purchasing, sales and administration services; as well as ability to promote growth from present $4,000,000 annual sales to its highest potential in active market area.

Salary, and supplemental benefits programs will be commensurate with experience and responsibility. Position offers good opportunity for advancement to successful applicant. Send complete resume of your experience, education and other qualifications to:

P-7134, Engineering News-Record
Classified Adv. Div., P. O. Box 12, New York 36, N. Y.

POWERHOUSE SUPERINTENDENT

Superintendent of power plant located in Iran. Must be university graduate, with degrees in Electrical Engineering preferred, or have the equivalent in engineering experience. Should have at least two years experience as service operator in hydro-electric powerhouse. Working knowledge of plant equipment necessary. Complete responsibility for disassembly repairs and reassembly of major equipment. Salary commensurate with ability. Living allowance and other fringe benefits. Eighteen to twenty-four month contract. Send complete detailed resume of experience and qualifications to Personnel Department.

HARZA ENGINEERING COMPANY
400 W. Madison St. Chicago 6, Illinois

ENGINEERING DESIGN PERSONNEL

Highway & Bridge Designers, Highway & Bridge Draftsmen

Career opportunities for individuals interested in professional recognition ample opportunity for advancement based on merit, plus group life insurance, hospitalization, paid vacation and holidays.

EXPERIENCE REQUIRED

Mail Resume To F. W. Ahern, Personnel Director

MICHAEL BAKER, JR., INC.
Consulting Engineers
Baker Building Phone: SPruce 4-3010 Rochester, Penna.

CHIEF HARBOR ENGINEER

For Overseas
(Top Salary)

We are seeking an extremely competent harbor engineer for a foreign assignment. This individual will be responsible for collection and evaluation of all field data, including materials, surveys, foundation investigations, construction methods & costs, and the preparation of schematic plans.

U.S. citizenship and similar previous experience essential.

DANIEL, MANN, JOHNSON, & MENDENHALL
3325 Wilshire Blvd., Los Angeles, Calif.

GRAVER

has excellent openings for the following list of qualified personnel:

Junior and Senior Estimating Engineers
Stress Analysts (Research)
Chemical Engineers (Research)
Welding Development Engineers
Metallurgical Engineers
Design Engineers (Plate Structures)
Junior and Senior Contracts Engineers

All of the above should hold degrees and their training and experience should be on structural design as related to large plate structures; such as, field erected containers, towers, stacks, etc. Address all applications to: Industrial Relations Department,

GRAVER TANK & MFG. CO.
Division—Union Tank Car Company,
35 East Wacker Drive, Chicago 1, Illinois

FIELD ENGINEER

Nationally known organization offers excellent opportunity for young civil engineer graduate. Engineering consulting and promotional work in highway and concrete fields. Location Ohio, Western Pennsylvania and Kentucky area. Car allowance and expenses. Permanent position. Salary based on qualifications and experience.

P-6996, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

PURCHASING AGENT

Desirable opening for a purchasing agent with an establishing minimum-size engineering-construction firm serving the chemical industry throughout the United States. Applicant should possess 5 to 7 years experience in responsible industrial buying position. Experience and procurement of equipment and materials for construction of chemical plants desirable; salary commensurate with experience and ability. Send detailed resume outlining education, experience, and salary requirements in confidence to:

Manager of Personnel
VULCAN-CINCINNATI, INC.
120 Sycamore St. Cincinnati 2, Ohio

SALES ENGINEERS WANTED

Several sales territories now available for aggressive, engineering-trained and/or educated men. Products have long standing acceptance in water, sewerage, industrial, and marine fields. We feel that we prefer straight commission agents, but would entertain possibility of salary plus commission factory men.

New ownership, new management, plus 1 million dollar improvement program of plant and product line enlargement requires alert, aggressive national sales force.

If interested, send resume directly to:

EARL C. BRADLEY, JR.
General Sales Manager
Ludlow Valve Manufacturing Co., Inc.
Troy, New York

Superintendent Crushed Stone Operation

Nationally known diversified corporation has immediate opening for a superintendent in one of its quarry and bituminous concrete operations.

Experience in this type operation with responsibility for production, maintenance, quality, labor relations, etc. is essential to qualify.

Salary and supplemental benefits program will be commensurate with experience and responsibility. Send complete resume of your experience, education and other qualifications to—

P-7171, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

VICE PRESIDENT

New York civil engineering firm active in bridge, highway and urban development projects has an opening for a General Manager with Vice President potential. He will be responsible to the president for the direction, control and operation of corporate activities.

The applicant should have a BSCE with considerable engineering and managerial experience in such fields as bridges, highways, harbors, airports and tunnels.

Please submit detailed resume of training, experience and salary requirements in confidence to:

P-7186, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

(Our staff knows of this opening.)

Concrete Pipe Plant Superintendent

Nationally known diversified corporation has immediate opening for a superintendent in one of its concrete pipe plant operations. To qualify applicant must have experience with McCracken machine concrete pipe production and maintenance and be capable of assuming responsibility for quality, labor relations, etc.

Salary and supplemental benefits program will be commensurate with experience and responsibility. Send complete resume of your experience, education and other qualifications to

P7172 Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

An employment advertisement in this EMPLORMENT OPPORTUNITIES section will help you find the engineers you need. It's an inexpensive, time saving method of selecting competent personnel for every engineering job.

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 645 N. Michigan Ave.
SAN FRANCISCO 11: 255 California St.

• POSITIONS VACANT

Structural Engineer-Midwest consulting firm seeks Ph.D. to design complex steel structures, reinforced and prestressed concrete. **Preference will be given to applicants with practical experience. Permanent position with** established firm in business since 1929. **Moving expenses paid. Send resume, including education, experience, and personal qualifications to P-6245.** Engineering News-Record.

Electrical Engineer—Estimator—man with experience in electrical estimating particularly in industrial, pole line, and power plant work. Reply to "Estimator" Box 1078, Columbus, Ga.

Project Engineer & Estimator—Permanent position with reputable General Building Contractor in North Central Connecticut. State experience, education, salary requirement and availability. P-7126, Engineering News-Record.

Engineer Designer—Permanent career opportunity for qualified engineer experienced in design and operation of aggregate plants, central mix concrete plants, and related materials facilities. East coast location with multi-plant operator. P-7090, Engineering News-Record.

Engineer with estimating and management experience for general contractors office doing industrial and public works building. Excellent opportunity. State age, experience and references. Our employees know of this ad. Midwest location. P-7062, Engineering News-Record.

Engineers, Sanitary Design—2 to 5 years experience in layout of water and sewage treatment plants, including equipment and piping arrangements. N. Y. City consulting office. P-7079, Engineering News-Record.

Civil Engineer graduated recently. Opportunity to learn construction business with large firm operating nationally. F. D. Rich Company, 550 Summer Street, Stamford, Conn.

Sanitary Engineer. Opportunity to assume overall supervision and client contact on sanitary projects for long-established midwestern consulting engineering firm. Experience in all phases of sanitary work is desired. Send complete resume of experience and qualifications. Replies held in strictest confidence. Our employees know of this advertisement. P-7178, Engineering News-Record.

Wanted: Civil Engineer with water and sewage treatment design experience—location Mid-west. Submit complete resume, salary and availability. Write P-7189, Engineering News-Record.

Estimators—Civil, Mech., Electrical: Checking change orders. Please send resume. All replies confidential. P-7176, Engineering News-Record.

Materials Engineers. Graduate or registered. Well versed in testing & control of soils, concrete, and bituminous mixes; familiar with current American highway construction practice. Age 35-50. Salary $9,000 to $12,-000; moving allowance. Location east or south (possibly foreign at increased rates). Complete resumes to P-7159, Engineering News-Record.

Civil or Architectural Engineer. Challenging structural design position in an expanding international company. Headquarters in Sioux City, Iowa. Send resume to P-7154, Engineering News-Record.

Detailers, Structural Steel—Fully experienced only—permanent positions—New England Iron Works, P. O. Box 955, New Haven, Connecticut.

Materials Engineer with Civil Engineering degree and considerable experience in soils and materials testing, design of mixes, exploration for construction materials, etc. Salary range $144.50 to $203.50 per week. Experience and other qualifications will be considered in establishing starting salary. Apply, Employment Manager, The Zia Company, Los Alamos, New Mexico.

POSITIONS VACANT

Project Engineer, permanent position with established airport engineering firm. Applicant must know airport layout and criteria and have experience in design or construction. Ability write reports and work with high officials required. Openings South America and Middle East. Salary open. Airways Engineering Corp., 1212-18th St., N. W., Washington 6, D. C.

Jr Engineer—BSCE for work related to Municipal Public Works. Salary $6,000-$6,-500 depending on experience. Send complete resume to Personnel Director, City Hall, White Plains, N. Y.

Structural Steel of Multi-Story Buildings. Aggressive and growing 40-year old construction firm seeks two experienced men. During first six months in your city, work is part-time, you choose the hours. Then it develops into full, responsible position in estimating, supervision or sales. We want men to grow with us. Tell us about your abilities and desires. P-7177, Engineering News-Record.

Surveying Instruments. Experienced repair man for well-established firm 10 miles from N.Y.C. Interview can be arranged in your area. Reply in confidence to our advertising agency: Monitor Advertising, 25 E. 26 St., N.Y.C. MU 5-8869.

Soils & Foundation Engineer—C.E. graduate with education or experience in soil mechanics field for responsible position with engineering firm. Location: Middle Atlantic states. Resume to P-7157, Engineering News-Record.

Landscape Engineer—ability to coordinate estimates large landscape projects. Must have good knowledge of plant material & grading operation. Salary open. Larkfield Landscapers Inc., 555 Larkfield Rd., East Northport, L. I., N. Y. FOrest 8-7388.

Engineer, Civil-Structural. Minimum 5 years responsible design experience in structures, bridges and foundations. Excellent opportunity in established organization for a competent engineer with initiative and leadership potential. Before interview, please send complete resume of education, experience and qualifications including salary expected to Charles W. Yoder & Associates, 3505 W. Center St., Milwaukee 10, Wis.

Director of Public Works—The Village of Palatine, Illinois (Population 12,000) is accepting applications for the position of Director of Public Works. Experience and/or engineering background desired. Includes direction of Street, Water, Sewer, Parking System divisions. Salary range $7,280 to $9,230. Send resume to: Village Manager, Village of Palatine, 54 S. Brockway Street, Palatine, Illinois.

• EMPLOYMENT SERVICES

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 50 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 659 Brisbane Bldg., Buffalo, N. Y.

• POSITIONS WANTED

General Superintendent-Proj. Mgr. Hvy Const. roads, bridges, bldgs, flood control tunnels, sewage & sewage disp. Concrete mech. background. PO Box 48 Clayton 5 Mo.

Chief Estimator—25 yrs. experience Bldg. Const. — best references — desires position with General Contractor in South. Fully qualified for complete charge projects bidding stage to completion. Minimum salary $12,000. Will relocate to suit. PW-7018, Engineering News-Record.

A qualified Chief Estimator and Production Executive desires connection with General Contractor who wants a Florida outlet. Will furnish office, office machinery, take-off, and pricing on an exclusive basis for a reasonable weekly retainage fee. It will pay to investigate this proposition. W. C. Dick, 3507 Cardinal Boulevard, Daytona Beach, Florida. Telephone Clinton 5-1218.

POSITIONS WANTED

Hydraulic Dredge Executive Civil Engineer available. Over 20 years experience in field investigation, cost estimates, management, consultation. Full time or project basis. PW-7022, Engineering News-Record.

Foundations & Materials Engineer, reg'd PE. MS Soil Mechs & Found Eng'g. MS Hwy Eng'g. About nine years experience in all phases of soils, foundations & materials including field & lab work. Diversified background of design & construction of hwys, bldgs, dams, etc. Specifications & reports. Desires responsible position preferably with consulting engrs, domestic or foreign. PW-7052, Engineering News-Record.

Available immediately—Chief Estimator, complete knowledge all phases gen'l contracting. 15 yrs. experience commercial, industrial, institutional bldgs., municipal & private hvy const. Design & engr'g background. Last 7 yrs. employed as Proj. Mgr. & Chief Estimator. Permanent affiliation with potential desired. Write PO Box 53, Hales Corners, Wis. Telephone Milwaukee, Wis. GArden 5-6305.

Executive, 16 yrs const exp, capable administrator, mgr, atty, efficient coordinator, govt contracts. PW-7093, Engineering News-Record.

Attorney-Construction Specialist seeks corporate position, or with law office engaged in heavy contracting arbitration, litigation. Technical-practical background in industry custom and usage. Government labor experience. PW-7140, Engineering News-Record.

Plant Engineer, Boston vic., 15 yr. exper. 4A companies, Engr. office procedure, estimating, cost accounting, contract admin., light drafting, super: field wk., layout, piping, pumping, auto control systems, LP steam, heat exchange. BSCE, PE. PW-7139, Engineering News-Record.

MS in Civil-Structural Engineering—27—4 yrs. exp. in foundations & struct. design. Prefer W. Coast. Resume on request. PW-7138, Engineering News-Record.

Construction Estimator, 58, A-1 ability. Can take full charge of bid. Fully experienced all phases & types of bldg. const'n, sub-contract neg., purchases, exped'g costs. Min. $12,000. PW-7145, Engineering News-Record.

Civil Eng. 25 yrs. exp: layout engr., field engr., and asst. const. engr. on hwys, locks, dams and buildings. Seeks job as field or layout engr. or party chief. Graduate. 57. $150. PW-7141, Engineering News-Record.

Supt., Estimator, experienced in all phases of construction. Foundations, sewers, waterworks, concrete structures, heavy excavation, erection and operation of batch plants. Thorough knowledge of const. methods and estimating from take-off to bid price. Presently employed but desires challenging position with future. PW-7114, Engineering News-Record.

Registered (2 states) Str. Civil. 30 years exp. 14 years supervision in bridges, buildings, hwys. Associate acceptable. PW-7185, Engineering News-Record.

Cost Accountant—14 years experience 5 of which were in the construction field. Married, white, 41 years of age. PW-7180, Engineering News-Record.

Project Manager — Experienced — Public Works. Penna. or New York area. PW-7158, Engineering News-Record.

Overseas or W. Coast challenging assign. Const. Eng. Supt. BSCE, 33, versatile, capable, 11 yrs. diversified exp. indust, commercial, high rise, underground. PW-7146, Engineering News-Record.

Graduate Civil Engineer, 37, 10 years experience in highway design and specifications writing. Nisei, speak and read Japanese fluently. Seeks position in Japan. PW-7155, Engineering News-Record.

Construction Engineer—25 years responsible charge supervisory and administrative positions all types of building construction projects both private and government financed. Cost conscious Administrator, Superintendent, Estimator, Organizer, Coordinator, Expeditor. Keen knowledge contracts, procedures, drawings, specifications, layout construction methods, plant and equipment. Excellent references. Address replies to 315 Dixie Drive, Towson 4, Md. Phone Valley 3-1946.

POSITIONS WANTED

(Continued from preceding page)

Civil & Structural Designer—20 yrs. exp. domestic and England. Plant development, group leader. Steel and cement plants, hangars & airfields. Overseas or far west. PW-7174, Engineering News-Record.

Structural Engineer—P.E.—13 yrs. exp. various types bldg. structures. Desire design, constr. or sales position west of Miss. PW-7190, Engineering News-Record.

Construction Engineer—Project Manager. Age 32—Residential, commercial and industrial projects. Field supervision, estimating, purchasing, sub-contractor negotiations, job scheduling. Presently employed. Location South or South-West. PW-7197, Engineering News-Record.

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ENR—T1/3

Schedules Must Be Met

IT IS GOOD NEWS that the President's Missile Sites Labor Commission will ride herd on labor contracts covering work at missile sites. But this news is not enough. For the Commission, in its efforts to keep labor-management peace in base building, is empowered only to suggest, cajole, mediate and stimulate adverse publicity.

The rest is up to the unions and the contractors. In the absence of further controls, no one but they have power over wages, wage demands and work stoppages.

What the Commission has done as one of its first big steps is recommend that missile site labor contracts keep in line economically with contracts covering other construction work performed under similar circumstances. The Commission says it is particularly concerned with excessive premium pay, travel and subsistence allowances—some of the abuses that have reflected adversely on the construction industry and have given the McClellan committee much to consider (see p. 63).

The Commission's request that labor and management review their contracts, and temper them where necessary, should never have had to be made; nor should the Commission's request that unions and contractors work together to speed up construction of missile and space sites. In view of the threatening Berlin situation and President Kennedy's urgent appeal for cooperation, the Commission's requests obviously must be heeded. At stake is the safety of every citizen—as well as the sanctity of pledges, the future of voluntary agreements and the public image of the construction industry.

It is true that labor problems at missile sites are not as horrendous as they once were. Perhaps the state of emergency President Kennedy declared they had caused on May 26 no longer exists. A little improvement, however, is not enough. The public should expect, and continue to demand from unions and contractors, nothing short of elimination of delays and unnecessary costs.

President Kennedy has said: "The national interest comes first above any other consideration." And in his Berlin speech, calling for increased efforts for defense, he said, "We have mortgaged our very future on this defense—and we cannot fail to meet our responsibilities." With or without the influence of the President's Missile Sites Labor Commission, the responsibilities of missile base builders—management and labor—are perfectly clear. Schedules must continue to be met.

Credit Due OCDM

MUCH GOOD WORK IS ALREADY DONE as the Corps of Engineers takes over responsibilities for fallout shelters (ENR July 27, p. 19). The Office of Civil and Defense Mobilization, now shifting responsibilities to the Pentagon, should be recognized for its accomplishments in surveying and disseminating shelter information.

OCDM's fallout shelter material has long since made available to architects and engineers useful guides to shelter design. Extensive studies of government and private research into radiological shielding formed the basis of these guides. And OCDM has tried hard to spread the information gathered. Seminars have been conducted; courses in design have been suggested. Certain of its publications have been distributed to members of the American Institute of Architects and the American Society of Civil Engineers, others to the Society of American Military Engineers. (Most important of these: "Guide for Architects and Engineers," published by the U. S. Government Printing Office in May, 1960.)

The impetus given to civil defense by President Kennedy's Berlin speech, plus his assignment of fallout shelter work to the Defense Department, could result in construction of hundreds of millions of dollars worth of shelters in the next few years. If it does, OCDM's early role in developing shelter designs should be duly credited for making it possible.

Don't Count on Seawater

THE DAZZLING PROSPECT of oceans of cheap fresh water will no doubt enchant anew some persons as the result of the Kennedy Administration's new spending proposals for salt-water conversion (see p. 23). The idea of fresh water from the sea holds such dramatic possibilities for the future that it can blind one to present realities.

Actually, the Administration's program is a reasonable one insofar as its objective is to advance desalting technology. If we are ever to make anything but a gimmick out of salt-water conversion (overlooking the isolated instances where it is economic now), we must continue to press the search for new methods and large-scale tryouts of known methods. This the Administration proposes.

However, most of what the program will accomplish toward solving the immediate water problems of the individual communities involved could be done for less money by conventional methods. To those who entertain the hope that desalting might be a cheap alternative now to new reservoirs, pipelines and filtration plants we say "forget it." If some communities find that a desalting plant under the new program will be the cheapest way to get additional fresh water, the likely reason won't be the economy of desalting but rather the fact that U. S. taxpayers foot a big share of the local water bill.

Few water users in this country pay more than 40 cents per 1,000 gal. Most pay less. Less than half that amount goes for water at the source. Compare that with $1 per 1,000 gal at the source, a goal yet to be reached for converted seawater. One dollar per thousand gallons, according to the American Water Works Association's Saline Water Conversion Committee, will transmit 100 million gal a day 1,000 miles (ENR June 15, p. 24).

Such figures make it obvious that all but a very few communities and industries must continue to look to conventional water supply sources.

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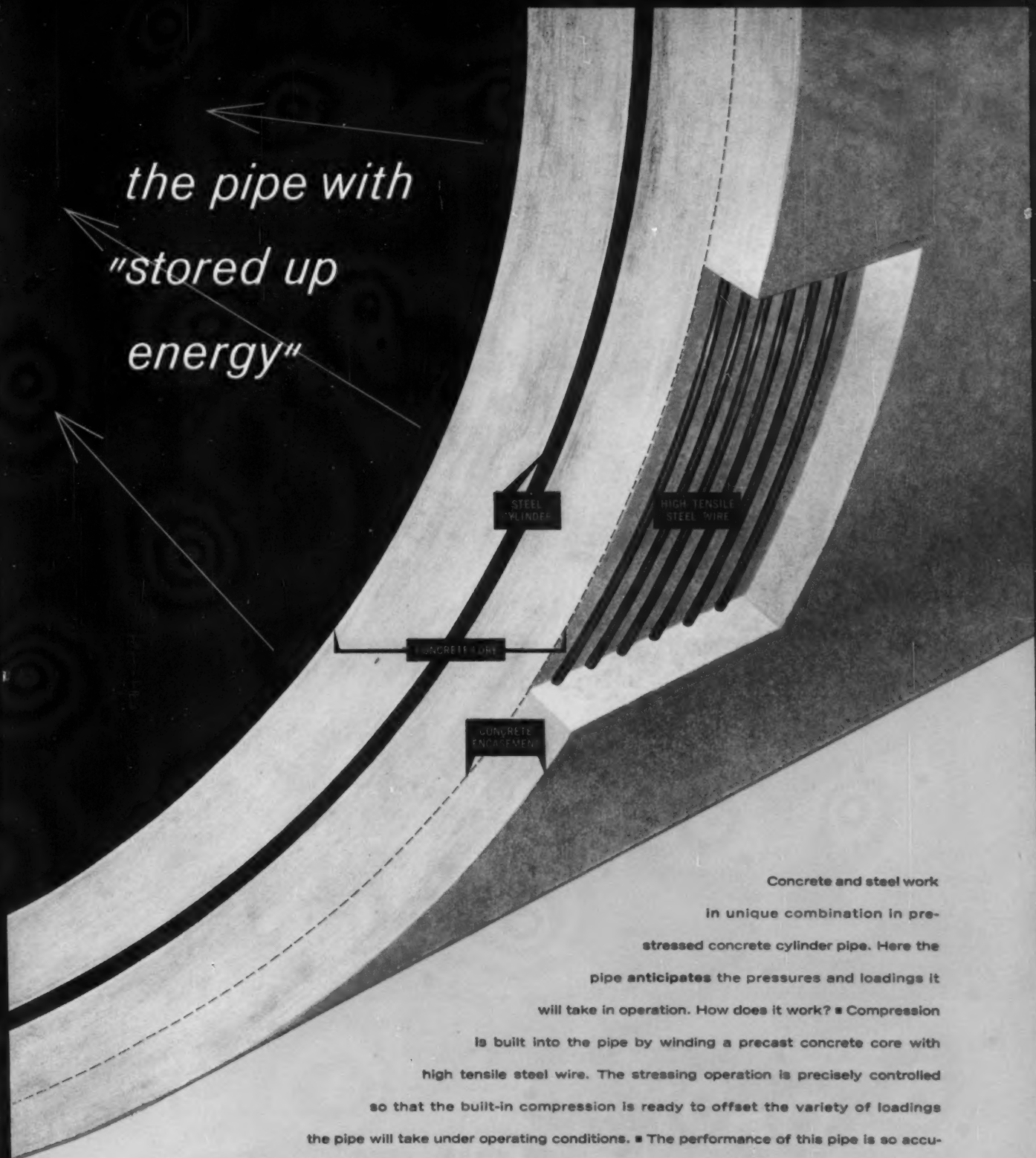

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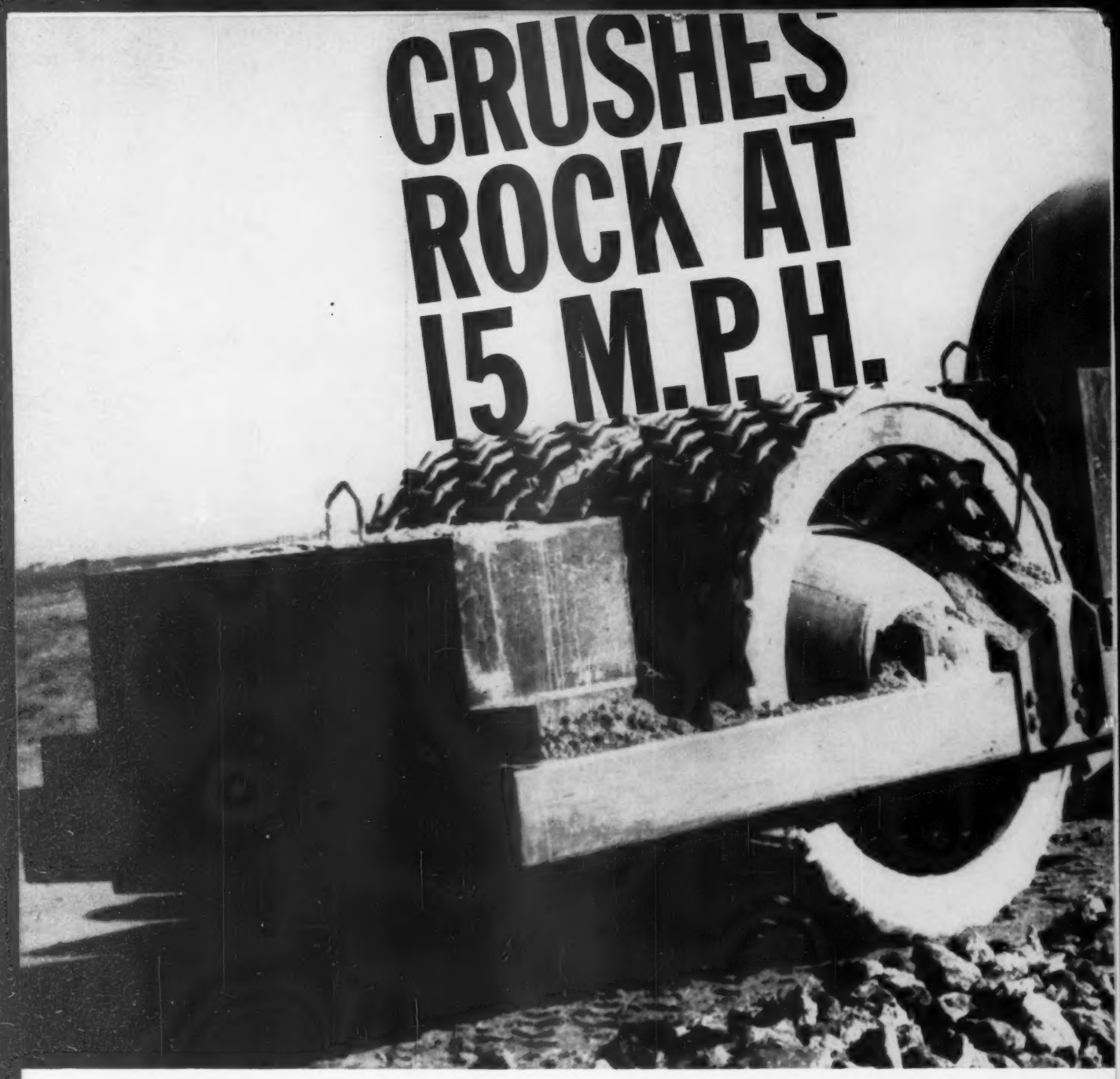

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